The Applicability of Customary Fisheries Management Principles for Managing Large-Scale Marine Areas: Rote Island, Indonesia

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Abstract

Traditional rules and practices for managing fisheries, customary fisheries management, have been practised for generations by communities in many countries. Most customary fisheries management is applied in the context of small-scale environments; customary fisheries management has not been implemented in large-scale marine environments, where there are substantial challenges due to the diversity of resource users, the migratory characteristics of fisheries and the dynamic nature of the environments. Nevertheless, to address the challenges of large-scale marine environments, government and non-government organisations have established multilateral environmental agreements.

Drawing on an institutional analysis and development framework, this research assesses the applicability of customary fisheries management to large-scale marine management regimes. This study begins by examining customary fisheries management's characteristics to understand its compatibility with modern practices of natural resources management. Then, it assesses how customary fisheries management is being applied across government tiers and marine zones in pursuing the goals of multilateral environmental agreements.

The empirical focus is on how customary fisheries management on Rote Island is applied in the Sawu Sea Marine Protected Area in Indonesia. This marine protected area is a goal of the Coral Triangle Initiative, an example of a multilateral environmental agreement, established in 2009 by six countries in the Indo-West Pacific region to manage fisheries. Data collection included an analysis of policy and other documents and interviews with key stakeholders across all government tiers in Indonesia.

This study found that Rote Island's customary fisheries, also known as *hohorok*, possess principles of modern fishing practices, justifying its revival and re-application to the protected area. However, *hohorok* failed to address Rote Island's fisheries problems. Changes in the local contexts, such as social and politics aspects, and in the new *hohorok* itself complicate *hohorok* applicability. The revived *hohorok* keeps the customary fishers happy, which facilitated the Indonesian government to gain customary fishers' consent to manage fisheries. The national government used *hohorok* re-application to serve its interests: to re-gain control and hegemony over decentralised fisheries management, and to share costs of fisheries management with both global donors and customary fishers.

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Palmerston North
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List of Abbreviations

AMAN	*Aliansi Masyarakat Adat Nusantara*, *Nusantara* Customary Communities Alliance
AusAID	Australian Agency for International Development
CBFM	Community-Based Fisheries Management
CCAMLR	Commission for the Conservation for Antarctic Marine Living Resources
CFM	Customary Fisheries Management
CI	Conservation International
CMCA	Customary Marine Conservation Area
CPR	Common Pool Resource
CSI	Caribbean Sea Initiative
CTI-CFF	Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security
CTI	Coral Triangle Initiative
DCF	District Conservation Forum
DPA	Development Planning Agency
EAFM	Ecosystem Approach to Fisheries Management
FMAD	Fisheries and Marine Affairs Department
GEMALA	*Gerakan Masuk Laut,* Fisheries capture and culture movement
GT	Gross Tonnage
HELCOM	Baltic Marine Environment Protection Commission
IAD	Institutional Analysis and Development
IRP	Indonesia *Rupiah*, Indonesian *Rupiah*
IUCN	International Union for Conservation of Nature
IUU	Illegal, Unreported and Unregulated
KM	Kilometre
LEK	Local Ecological Knowledge
MCA	Marine Conservation Area
MEA	Multilateral Environmental Agreement
MMAF	Minister of Marine Affairs and Fisheries
MoMAF	Ministry of Marine Affairs and Fisheries
MPA	Marine Protected Area
MUHEC	Massey University of Human Ethical Committee
NGO	Non-Government Organisation
NM	Nautical Mile
NMU-MPA	National Management Unit for Marine Protected Area
NRM	Natural Resource Management
NTT	*Nusa Tenggara Timur*
OECD	Organisation for Economic Co-operation and Development
PCF	Provincial Conservation Forum
Rp.	*Rupiah*
QRU	Quick Response Unit

RNFAC	Rote Ndao Forum for Adat and Culture
TD	Tourism Department
TNC	The Nature Conservancy
TNR	Terrestrial Nature Reserve
TSEPM	Team for Studying, Establishing and Planning of the Management of the Sawu Sea MPA
TURF	Territorial Use Rights for Fisheries
UNDANA	*Universitas Nusa Cendana*, Nusa Cendana University
UNDP	United Nation Development Programme
UNIKA	*Universitas Katolik*, Catholic University
UNKRIS	*Universitas Kristen*, Christian University
UNL	*Universitas Nusa Lontar*, Nusa Lontar University

List of Indonesian Terms

Adat	Customary rules and practices
Area suaka margasatwa	Habitat/Species Management Area
Cagar Alam	Strict Nature Reserve
Bhinneka tunggal ika	Unity in diversity
Bupati	Mayor in rural district
Gubernur	Governor
Ketinting	A three gross tonnage boat
Keturunan	Descendants
Pribumi	Native people
Non-*pribumi*	Non-native people
Politeknik	Vocational School
Rupiah	Indonesian currency
Ulayat	Customary rights to manage natural resources
Suku asli	Indigenous tribes
Suku terasing	Isolated tribes
Taman Nasional Perairan	National Marine Park
Taman Wisata Alam	Protected Landscape/Seascape

List of Rote Terms

Bafak or *bafan*	Mouth
Dano	Lake
Deabatur	A fence in the sea made of stones established to entrap fish during low tides
Dombe	Knife
Hadak	Customary rules and practices
Horo	To forbid also to divide into two (Verb)
Hohorok/hoholok	Customary rules and practices for natural resource management (Noun) Natural resources managed under customary rules and practices (Adjective). Example: *hohorok* sea
Huk	Big; large, source
Ina	Women; mother
Leo	Tribe
Mana	The, the official commissioned with particular task
Manahoro	*Hohorok'* keeper
Mane	Male, also chief
Manedombe	Customary attorney
Maneleo	Chief of tribe
Manek	Chief of domain/kingdom
Maneleo ina huk	Chief of all *maneleo*
Manenggero	Customary judge
Nggero	To divide into two; to sanction
Nusak	Domain
Tasi	Sea
Tasi bafak	Sound

Chapter 1 Introduction

1.1 Research Problem

On most Sundays in the 1970s and 1980s when I was growing up on Rote Island, a small island in the Indonesian Sawu Sea, the beaches were crowded with locals. These were happy times because local community leaders opened fisheries to everyone after more than a week or so of closure. In the 1980s, on Rote Island, I recall, my friends and I always tried to get up early so that we could arrive when there were not many people. We tried to take as much fish, seaweed and shellfish as possible within the allowed coastal areas, but we could only use hands or simple tools. This was risky because of the possibility of injury from poisonous fish. It was taboo to catch fish using nets. Despite the physical risks and cultural constraints, we always came home with more than enough fish.

However, much of the joy that used to be part of weekly fishing was lost when the national government allowed commercial ships to fish around Rote Island with trawl nets in the 1980s. These vessels were enormous and had nets that were larger in size than the island. After just a few visits, these commercial fishers took away most of the fish and destroyed marine life around the islands. Competition and conflict between fishers intensified from the 1990s as a result of decreasing fisheries. Parents had to spend days at sea so that they could bring home the same amount of fish they used to catch within a few hours along the coastlines. Sunday mornings were no longer joyful moments, as what was known in the local language as the 'haven of fish' was now a deserted pool. Some marine areas became inaccessible to local fishers after the Indonesian government implemented new marine conservation measures in 2014. Then, in 2016 the government passed legislation banning foreign vessels and started strictly enforced laws to curb illegal fishing. Customary fishing communities in many countries, not just on Rote Island, who for generations managed fisheries using customary practices and rules, now had to comply with new government rules in accessing their traditional fisheries. Nevertheless, government also promoted the customary rules and practices for managing fisheries.

Customary norms and rules are practised not only by small-scale fishers on Rote Island; they are practised also by fishing communities in many developing countries,[1] particularly in the Indo-West Pacific region. They are applied in managing both marine and terrestrial-based natural resources. Cinner et al. (2007, p. 202) define customary management as " [indigenous] local norms and practices that regulate the use, access, and transfer of resources [fisheries]".The role of customary fishing practices is as important as formal fisheries management (Berkes, 2006; Cinner & Aswani, 2007; Tucker, 1999).

However, new challenges arise; commercial industrial fishing and scholars are divided about the effectiveness and adaptability of customary fisheries management (CFM) to meet these new challenges in managing fisheries. The applicability of CFM to small-scale marine environments has been widely tested and validated in many countries in the Indo-West Pacific region (Aswani, 2005; Cinner & Aswani, 2007; Friedlander, 2018). Some scholars (for example, Berkes, Colding, & Folke, 2000; Cinner & Aswani, 2007; Harkes & Novaczek, 2000) argue that CFM evolves over time with changes in indigenous knowledge, cultural beliefs and practices. This adaptability enables CFM to adopt principles and techniques of other fisheries management regimes (Berkes, Colding, et al., 2000; Berkes, Kislalioglu, Folke, & Gadgil, 1998; Cinner & Aswani, 2007). Other scholars (Jentoft, 2004; Scott, 1993) acknowledge that sometimes CFM is unchangeable and it is only applicable to local level marine environments, and incompatible with formal fisheries management.

Ability to extend CFM jurisdictions on a broader scale challenged by the dynamics and complexity of large-scale marine environments (Berkes, 2006; Dietz, Ostrom, & Stern, 2003; Jentoft, 2004). Due to their characteristics, most marine environments are not privately owned; instead, anyone can access them, influencing the quality of governance, known as governability (Bavinck et al., 2005; Jentoft & Chuenpagdee, 2015; Kooiman, 2005). The marine environment

[1] Customary fishing communities in some developed countries such as New Zealand and Canada are also practicing customary fisheries management but more at a larger scale, which make them different from small-scale customary fishers in developing countries who are associated with poverty and a lack of access to power (Béné, Hersoug, & Allison, 2010; Durette, 2018).

is dynamic and marine species are migratory, and the stakeholders, both as a system-to-be-governed, are diverse in their interests and values. As a result, governing system, such as CFM and small-scale formal jurisdictional-based rules, have limited capacity to shape the behaviours of resource users in other territories (Brown, 2003a; Chuenpagdee, Kooiman, & Pullin, 2008; Folke, Pritchard, Berkes, Colding, & Svedin, 2007). Some scholars (for example, Berkes, 2005) question whether CFM is applicable to managing large-scale marine environments.

Furthermore, these marine ecosystems cross national borders, requiring coordinated management by states. Thus, many national governments have established collaborative initiatives such as multilateral environmental agreements (MEAs) to manage large-scale marine environments. Examples of such initiatives include the Commission for the Conservation for Antarctic Marine Living Resources established in 1993, the Baltic Marine Environment Protection Commission established in 1974, the Caribbean Sea Initiative launched in 1998 and the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF), also known as CTI, in 2014 (Valman, Österblom, & Olsson, 2015). These MEAs enable states and non-state organisations to take part in governing marine resources and other environmental problems in general (Barrett, 2015; Mitchell, 2003).

Central to this thesis is the CTI, which was established by Indonesia and five other countries [2] in Indo-West Pacific region. It aims to "address threats to the marine, coastal, and small island ecosystems, through accelerated and collaborative action" (Secretariat of Regional Coral Triangle Initiative, 2009b, p. 1). To achieve this aim, the CTI established five goals: designating priority seascapes, applying an ecosystem approach to fisheries management, establishing marine protected areas, achieving climate change adaptation measures, and improving threatened species status (Secretariat of Regional Coral Triangle Initiative, 2009b).

[2] The Philippines, Malaysia, East Timor, Papua New Guinea and the Salomon Island (Secretariat of Regional Coral Triangle Initiative, 2009b)

These new ideas have implications for existing CFM and the problem of islanders' food security, which are the characteristics of small-scale fishers in this region and other developing countries (Béné et al., 2010; FAO, 1997, 2015; Fidelman et al., 2012). Most of these fishers rely on fisheries to meet their needs of food but they have been marginalised from increased fisheries depletion by large-scale commercial fishers, by lack of law enforcement and by the government-sponsored of fisheries conservation. Thus, the fishers do not necessarily support such externally imposed new ideas.

Although the international scale addresses the spatial scale challenges, the establishment of MEAs, however, does not necessarily solve environmental problems. Many scholars (Armitage, 2008; Berkes, 2006; Gruby & Basurto, 2013; Libecap, 2014) argue that self-enforcement is not embedded in MEAs but instead in local informal rules. In his study of the effectiveness of various cross-country environmental institutions, Mitchell (2003) confirms that, while some MEAs have gained wide support, many of them have involved lengthy and difficult negotiation processes and many others suffer from a lack of compliance from participating bodies. This weak compliance is related to a lack of self-enforcing incentives, which is a typical characteristic of local rules (Young, 2002a) and it is also due to the absence of "a superordinate authority that can enforce rules and sanction violators" at regional and global levels (Young, 2006, p. 20). Thus, it is suggested MEAs may not solve environmental problems as effectively as local rules.

These problems have led scholars to propose integrating formal rules with local informal ones, but there has been no case that successfully implements this approach (Fidelman et al., 2012; Baker et al., 2013). In their investigation of European marine governance systems, Raakjaer et al. (2014) recommend a multi-level institutional arrangement. They argue that this approach enables various rules and practices across levels to co-exist and complement one another, rather than having hierarchical or domination arrangements. This view is supported by Cohen and Steenbergen (2015), who recommend the establishment of mixed institutional arrangements, in order to reconcile both formal and informal institutions in managing fisheries in the Indo-West Pacific region.

However, studies that recommend the incorporation of CFM within MEAs, do not clarify how to establish it. In fact, some scholars (e.g. Baker et al., 2013; Fidelman et al., 2012) have found that some national governments aim to integrate CFM with formal management, but often the effort reveals ignorance of local informal rules and results in their marginalisation. In their study about this integration effort in several countries in the Indo-West Pacific region, Cinner and Aswani (2007, p. 209) argue:

> … few countries have accomplished this successfully because there appear to be profound differences in the application, intent, and conceptual underpinnings of customary and modern practices.

1.2 The Rationale for the Study

The challenges in integrating CFM with fisheries management in developing countries are greater than in developed countries (Berkes, 2005). While developed countries have strong institutions and resources to manage fisheries, Ostrom (1990) highlights the lack of regulatory capacities of national governments in developing countries for defining and enforcing rules and rights related to resources. This situation is exacerbated because most marine resources in developing countries have been previously managed with customary rules and practices. Hilborn et al. (2005) add that national governments often impose formal rules and deny customary rules. This situation results in diminished *de facto* rules, overlapping claims of rights (Tucker, 1999), and a lack of support from local people for fisheries management (Hilborn et al., 2005).

In most instances, regardless of the context, a significant change resulting from MEAs is a shift of planning across tiers of government, for example, from community level to national level (Anderson & Grewell, 1999). According to Meadowcroft (2002), a change to the jurisdictional level at which marine environmental governance is exercised is about changing stakeholders' access to power. Lebel et al. (2005, p. 1) add that these "scale choices can be a means of inclusion or exclusion" which can produce winners and losers. An example of

this can be found in the adoption of an ecosystem approach to fisheries management.

The introduction of an ecosystem approach to fisheries management, however, can address the concern of customary fishers who mostly rely on fisheries to meet their need of foods. An ecosystem approach to fisheries management "strives to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic, and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries" (FAO, 2005). The whole ecological (multiple species) and social (human activities) aspects within an ecosystem boundary are managed by an integrated management, by multiple rules and knowledge systems in adaptive ways, and at multiple jurisdictional, spatial and temporal scales for both goods and services (McFadden & Barnes, 2009; Pomeroy et al., 2015). The approach sees fisheries beyond "fish in the sea and people on the boats" to include features such as mangroves and coral reefs, coastal and marine activities, marine tourism, transport and mining (Pomeroy et al., 2015, p. 212). It "addresses the multiple needs and desires of societies' in the whole ecosystem in integrated ways making it different from a conventional fisheries approach that not only focuses on managing fisheries but also particular target species" (FAO, 2005). The approach differs from "traditional management approaches which were focused on individual species, on a small spatial scale, lacked research, and were based on a short-term perspective" (Ansong, Gissi, & Calado, 2017, p. 65). Thus, the needs of customary fishing communities are included in the approach's concerns.

There are several critiques of this approach. Organising multiple stakeholders across tiers of government is difficult and costly (Fidelman et al., 2012; Kuperan, Abdullah, Pomeroy, Genio, & Salamanca, 1998). Pomeroy et al. (2015) highlight a lack of understanding and capacity to implement the concept; Berghofer et al. (2008) find that collecting and updating regularly, and integrating different practices of knowledge data is challenging. In their study of politics of scale in natural resource management, Lebel et al. (2005) show that governments tend to use a single uniform approach at a level or scale for all levels, excluding lower tiers of government from managing fisheries, which can diminish their involvement and support for customary fishing communities in

managing fisheries. This 'one-size-fits-all' approach fails to recognise that environmental problems are dynamic, transboundary and multi-scalar, and thus it requires multi-level institutional management to enable representation of interests across levels (Folke et al., 2002; Toonen et al., 2013). Scholars (for example, Cash & Moser, 2000; Libecap, 2014; Meadowcroft, 2002) argue that the mismatches in the level at which natural resources are managed fail to balance competing interests, diminish equity and weaken self-enforcing incentives at the local level.

Earlier studies about the CTI have produced mixed findings about the role of member countries and local fishers in shaping the CTI's direction due to competing interests. Pomeroy et al. (2015) argue that the CTI will recover fisheries and ecosystem services such as food needed by local fishers. However, Foale et al. (2013, p. 1) argue, "the links between biodiversity conservation and improved food security [in the CTI] are contingent on various assumptions, many of which may not be met in practice". Fidelman et al. (2012, p. 48) highlight potential difficulty for the CTI reconciling competing goals of "sustainable development, poverty reduction and food security amidst a strong concern for biodiversity". Fidelman et al. (2014) highlight the fact that local people's voices were not reflected in the establishment of the CTI, which resulted in customary fishers being more disadvantaged than other stakeholders.

The interests of international donors and NGOs have shaped the development of the CTI. Von Heland et al. (2014) highlight the central roles of donors and international NGOs to drive the development of the CTI. They add further, "while this [the CTI regional action plan] in itself represents an outcome of negotiations amongst the NGOs, and to lesser extent donors, it does not adequately reflect the visions of other actors [member countries and fishers]" (Von Heland et al., 2014, p. 57). Valman et al. (2015) raise the domination of science in decision-making in the establishment of the CTI, while Fidelman et al. (2014, p. 126) claim that the CTI "is largely unknown by sub-national and local actors". Rosen and Olsson (2013) argue that regulatory policies used to achieve the CTI's goals do not particularly recognise the rights of local fishers to manage fisheries because there is a lack of institutional linkage across

jurisdictional levels.

These studies look at various elements of planning of the CTI, but none of them look at the integration of CFM within the management regime established by the CTI. While some scholars doubt the applicability of CFM, many MEAs have failed to gain support from local communities. Therefore, research needs to be undertaken that examines how CFM can be applied in large-scale marine environments, and specifically in implementing MEAs for large-scale marine environments. This study addresses the question: How applicable are customary fisheries management principles in developing countries to large-scale marine management regimes. It uses the example of the CTI and is an in-depth study of the way in which the Indonesian government sought to apply customary fishing in the development and implementation of the CTI. This detailed study focuses on Rote Island, which was directly affected by the establishment of the Sawu Sea MPA, instituted in 2014 by the Indonesian government to pursue the CTI's goals.

1.3 Research Aim and Objectives

The aim of this research is to assess the applicability of CFM principles for managing large-scale marine management regimes in developing countries. To achieve this aim, the research objectives are to:

1. Review theories of and concepts related to the applicability of fisheries management for managing large-scale marine areas;
2. Develop a framework to assess how CFM principles are applied in fisheries management;
3. Apply the framework to investigate fisheries management and applicability of CFM principles to the CTI through a case study research;
4. Assess whether the applicability of CFM principles in large-scale marine management is realistic; and
5. Recommend mechanisms to enhance the applicability of CFM in large-scale marine environments within a developing country context.

1.4 Structure of the Thesis

Chapter 2 critically reviews literature on the common pool resources, their management approaches and the applicability of CFM in management of common pool resources. The review includes challenges in governing large-size marine environments, CFM's right-based rules, adaptability in governing large-scale marine environments, and the management of large-scale marine environments.

Chapter 3 outlines the research design and methods. The chapter explains the research design, the research framework, the rationale for selecting the case, research ethics, methods of data collection and analysis, and strategies for enhancing the credibility of the study.

Chapter 4 presents the contexts that shape fisheries management in Indonesia. The contexts include geographic and marine ecology, socio-economic characteristics, political arrangements, customary communities and their rights, and marine conservation development in Indonesia.

Chapter 5 provides material on fisheries management in Indonesia. This chapter reviews the evolution of fisheries management at the national, provincial and district levels, which shapes measures to strengthen small-scale fishers and apply customary fisheries management into Indonesian fisheries management. The analysis covers fisheries management in Indonesia since its independence in 1945 to the recent effort to establish the CTI and the Sawu Sea Marine Protected Area (MPA) in Nusa Tenggara Timur (NTT) province.

Examination of customary fisheries management on Rote Island, an island within the Sawu Sea MPA in NTT province, is the focus of Chapter 6. This chapter aims to understand rules and practices associated with CFM on Rote, its attributes compared with modern rights-based resource management and its institutional design principles. The examination provides insights into how CFM has been applied in modern rights-based management and its suitability for governing large-scale marine environments.

Chapter 7 presents findings about how CFM on Rote Island is applied to the management of the Sawu Sea MPA. Using interviews and document analysis, it presents findings across management at different tiers of government and marine zones of the Sawu Sea MPA.

Chapter 8 discusses findings about the applicability of CFM in managing the Sawu Sea MPA around Rote Island. The chapter starts with a discussion about tensions between traditional and modern in applying *hohorok*, and the drivers for *hohorok* application. Then, it discusses the effectiveness of *hohorok* and factors shaping it. The last sections will be about both practical and theoretical implications of *hohorok* revival.

Finally, Chapter 9 summarises the study before it proposes a way forward for improving the applicability of *hohorok* and further research.

Chapter 2 Fisheries, Governing Challenges and the Applicability of Customary Fisheries Management in Large-Scale Marine Management Regimes

2.1 Introduction

There is an extensive literature on common pool resources (Ostrom, 1990), although there is less focus on customary fisheries; the accommodation of customary fisheries within modern large-scale marine management regimes remains largely unexplored. As a result, there is limited research highlighting the effectiveness of customary fisheries management (CFM) and lack of knowledge about the benefits of Multilateral Environment Agreements (MEAs) for customary fishers in developing countries.

This chapter provides an overview of scholarly literature on the nature of fisheries as common pool resources. It explores a variety of governing approaches used for governing this common pool resource and identifies critical elements that determine the ability to integrate two very different property rights regimes. In the second section, the nature of CFM, its characteristics, challenges and adaptability in managing fisheries across spatial scales is discussed. The third section outlines collaborative initiatives, particularly multilateral environment agreements and their challenges in managing fisheries. The chapter concludes with a summary of successful efforts to implement CFM in the management of large-scale marine management regimes.

2.2 Managing Fisheries as Common Pool Resource

Fisheries have long been regarded as an example of common pool resources, also known as commons, with unique characteristics, such as size, dynamics and complexity. Ostrom (1990, p.30), who has been very influential in the study of commons, defines commons as “a natural or man-made resource system that

is sufficiently large as to make it costly (but not impossible) to exclude potential beneficiaries from obtaining benefits from its use". Ostrom did not refer to particular regimes, but fisheries have these characteristics. It is costly and difficult to exclude beneficiaries (known as non-excludability) and prevent degradation (known as subtractability) of fisheries resources (Berkes, 2005; Ostrom, 1990), which can explain fisheries depletion.

This section examines characteristics of common pool resources and the various challenges of governing approaches from property rights-based resource management, scalar challenges of institutions, decentralised fisheries management to challenges of collaborative large-scale marine governance.

2.2.1 Challenges of Common Pool Resource

A simple explanation about the challenges associated with commons, according to Berkes (2005, 2006), is Hardin's (1968) 'tragedy of the commons'. In this metaphor, individuals are entrapped in a 'collective action dilemma' resulting from difficulties in excludability and subtractability. The dilemma refers to the tendency of individuals to exploit a resource at the expense of the whole community and the resource itself – and a lack of incentives for individuals to improve the resource that benefits the whole community (Acheson, 2006; Araral, 2014). As a result, Hardin (1968) adds that a focus on self-maximising behaviour is seen as a rational choice by community members.

To address common pool resource (CPR) dilemmas, several scholars (for example, Araral, 2014; Berkes, 2005) agree that non-excludability and the subtractability of commons result from ineffective institutions. The term institution is used to mean written laws, routines, customs, beliefs, knowledge and taboos that shape the rights, duties and relationships of community members in their interactions with their environments (Jentoft, 2004). North (1990, p. 3) defines institutions as "the rules of the game for society or, more formally humanly devised constraints that shape human interactions", choices and actions. Both formal rules such as policies, laws and regulation, and customary rules such as traditions, custom and taboos, defined as governing system play a central key in managing and solving natural, social and

organisational and problems (Koelble, 1995; March & Olsen, 1983). Other scholars (Bavinck et al., 2005; Chuenpagdee et al., 2008; Jentoft, 2007; Kooiman, 2005) define the former (institutions) as governing system, while the latter (social and natural aspects) as the system-to-be-governed. The interaction between the former and the latter, known as governing interaction, shapes the excludability and the subtractability of commons because they can provide both incentives and disincentives to influence people's behaviours (Chuenpagdee et al., 2008; Kooiman, 2003).

According to Ostrom (1990), the tragedy of the commons is the result of the absence of institutions in terms of property rights of the resources, where people see resource exploitation as a rational choice. However, these simple insights relate to commons in general. Berkes (2006) argues that literature about commons had started to focus on self-governing local institutions (for example, Ostrom, 1990), but due to the complexity of large-scale commons, literature now focuses on the issues of multiple users across jurisdictional levels (from local to global environments). Therefore, the following subsections examine property rights-based resource management, scalar challenges of institutions, decentralised fisheries management, and the challenges of large-scale marine commons leading to a review of collaborative large-scale marine governance.

2.2.2 Property Rights-based Resource Management

In line with arguments of early experts such as Bromley (1987), Soliman (2014, p. 253) defines property rights as "a bundle of rights, and that individual rights within this bundle can be separated, transferred, removed or added". Fundamentally, there are three rights: to use (access or withdraw resources), to possess (manage and exclude from) and to dispose of (alienate) the property[3] (Guerin, 2003; Musole, 2009; Schlager & Ostrom, 1999). These rights can be

[3] Access – right to enter and enjoy non-subtractive benefits
Withdrawal – right to obtain units or products of a resource system
Management – right to regulate internal use patterns and transform the resource through improvements
Exclusion – right to determine who will have access rights and withdrawal rights, and how those rights may be transferred
Alienation – the right to sell or lease management and exclusion rights (Schlager & Ostrom, 1992, pp. 250-251)

separated and combined for particular purposes with key characteristics: excludability, controlled subtractability, transferability, duration, and security of title (Aswani, 2006; Guerin, 2003; Scott, 2000) (see Table 2.1 for their definition).

Table 2.1: Characteristics of modern rights-based resource management applied to fisheries

Characteristics	**Definition (Example of fisheries)**
Excludability	Controlling fishers' access to fisheries by limiting fishing methods, time, areas and fisheries' size and catch.
Subtractability	The catch taken by a fisher decreases stock of fish the available to other fishers.
Transferability	Transfers of fishing's rights within and across members of social units such as families, tribes and communities
Duration	Whether the rights are permanent, or what the basis is for reallocation and whether the right holders would have any preference for future allocations of fisheries' rights
Security of title	Enforceability, certainty, security, ease of establishing fishing entitlements.

Source: Scott (2000, pp. 5-6) and Aswani (2005, p. 287)

The structure of these rights varies across property rights regimes (Musole, 2009). Scholars (see, for example, Bromley, 1987; Hanna, Folke, & Mäler, 1996) recognise four property right regimes: open access, private property, public property and common pool property. Each property regime has a different arrangement of rights (see Table 2.2).

Under open access property regimes, there is an absence of rights, the resources belong to everyone or there is no excludability; anyone can access, use and take the resources, thus leading to their degradation (Acheson, 2006). Under private property, all the characteristics of property rights such as excludability and transferability can exist, which encourages investment to maintain or improve the resources (Stewart, 2004).

Under public property regimes, individuals have the right to access and use the resources but there is no transfer of the rights. Governments can rent the resources, but Musole (2009) points out that often governments fail to assert their authority, which leads to *de facto* private property rights in which holders can possess and sell the right for a long period of time.

Finally, under common pool property regimes, members may access and withdraw the resources according to rules set by self-governing communities (Ostrom, 1990). Members can inherit and transfer their rights, but there is no right to trade the resources. As a result, Musole (2009) argues that common pool property rights are seen as less efficient, since members have disincentives to improve the resources but incentives to harvest the resources.

Table 2.2: Types of property rights regimes and their differences

	Private property	Common pool property	Public property	Open access
Ownership	Individuals	Collective	Government	None
Access	Closed	Member only	All	All
Excludability	High	Low	Low	None
Subtractability	High	High	Low	None
Transferability	High	Low	High	None

Source: Bromley (1987) and Hanna et al. (1996)

Berkes (2006) adds that property regimes can be changed and combined for particular purposes such as managing conflicts. In line with this view, Young (2006) argues that property regimes can co-exist, co-evolve and constructively combine to complement one another. Thus, Scott (1995, p. 33) suggests a multi-level institutional arrangement, similar to Ostrom's (1990) nested principle (discussed below) be applied to institutions at separate levels which, according to Young (2006), can avoid conflict between institutions and strengthen their harmony at large-scale commons (Berkes, 2006; Ostrom, 1990). Therefore, the following subsection focuses on identifying the challenges of institutions that shape their co-existence and conflicts.

2.2.3 Institutional Design Principles

Ostrom's (1990) support for common property regime is based on institutional design principles, by which, she believes the tragedy of the commons can be averted. As a prominent researcher of commons, she outlines her argument to focus on the study of small scale common pool resources "because the process of self-organization and self-governance are easier to observe in this type of

situation than in many others." (Ostrom, 1990, p. 29). She identified eight design principles for managing common property resources (Table 2.3), which she summarised from cases with strong collective action.

Table 2.3: Institutional design principles for commons

Operational principles
1). Clearly defined boundaries (Rules that are suitable to local ecological conditions, clearly identified individuals or households that have rights to withdraw the resource unit).
2). Proportional equivalence between benefits and costs (Rules specifying the amounts that a participant benefits are proportional to the distribution of labour, materials and other costs).
Collective principles
3). Graduated sanction for violation (Ease in enforcement of rules; it starts with low sanctions that get stronger for repeated violations).
4). Locally and participatory rules, rule-making and modification (mixtures of institutions), inducing compliance with rules with various mechanisms.
5). Conflict resolution mechanism (Availability of rapid, low-cost, local-based conflict resolution mechanism for conflicts among participants, or with officials).
6). Accountability of monitors and other officials to users.
Constitutional principles
7). Minimal recognition of rights to organize (Central government should not undermine the rights of local communities to establish rules).
8). Nested enterprises (Appropriation, provision, monitoring, enforcement, conflict resolution is organised in multiple layers of nested enterprises).

Source: Ostrom (1990, p. 90)

Ostrom (1999b; 1994) argues that local-based institutions possess strong collective action: the value that holds community members together to pursue collective interests, instead of personal interests through free-riding (Marshall, 1998). It is commonly found that the smaller the geographical size of a community, the stronger the trust and collective action among its members (Agrawal & Gibson, 1999; Marshall, 2008; Stern, 2011). Collective action in small communities arises from, among others, a long-standing knowledge and trust through face-to-face communication, shared networks and identity, reliable norms, and solidarity and reciprocity among members of communities (Cox et al., 2010; Putnam, 2001).

According to Soliman (2014), although property rights regimes have been studied widely, there are different perspectives on their application and

effectiveness. Hardin (1968) proposed imposing either a private property regime or a public property regime over resources. However, Ostrom (1990) favoured a common property regime to address the tragedy of the commons. This difference between scholars, according to Araral (2014), is acceptable, as Hardin's case is applicable to large-scale commons, while Ostrom tends to focus on small-scale commons. This means that the regimes fit into different spatial and temporal scales of commons (Hardin, 1998; Ostrom, 1990). There is no superiority among them, as Acheson (2006, p. 118) states, "there is no agreement as to what institutions would do the job best". Thus, both formal and informal rules with different property regimes can be equally effective in managing resources.

While the institutional design principles have gained wide validation and support (Cox et al., 2010), experts are divided in its applicability in large scale environments without diminishing local-level collective action. Varughese (1999) confirms in his research in Nepal that it is neither the size nor the homogeneity of community members, but it is the heterogeneity in the rules applied in small communities with different characteristics that produces collective action. Stern (2011), a proponent of the design principles, proposes the modification of some principles. He notes that although the principles have rarely been tested in large-scale environments, this does not imply that they are inapplicable. On the contrary, Araral (2014) disputes the applicability of the principles to large-scale environments. He adds that high transactional costs, increasing complexity and uncertainty in large-scale environments and diversity and conflicting governance and institutions can lead to a similar tragedy of the commons. However, Araral built this argument from specific non-empirical cases without going into details. Thus, Fleischman et al. (2014) argue that it is difficult to determine if Araral's argument is well supported.

Some scholars find that the principles' applicability is limited for managing large-scale environments due to complex and dynamic environments and resource users. Dietz et al. (2003, p. 10) consider that only three of the eight principles: 'participatory rule making, enforcement and changes', 'diversity of institutions' and a 'nested system' are applicable for large-scale marine management. They claim that these principles "provide necessary information

and infrastructures, deal with conflicts, induce compliance with rules and encourage adaptation and change". They use the requirements for robust governance to examine the effectiveness of these principles. Duit and Galaz (2008, p. 329) see robust governance as having the ability "to perform well regardless of the certainty and rate of change" Therefore, Dietz et al. (2003) argue that these principles are effective in governing dynamic environments and the conflicting interests of resource users at large-scale marine commons.

A recent study by Fleischman et al. (2014) notes that the principles have been applied to large-scale commons, but it has not been done systematically. Thus, "it is unclear which design principles from CPR theory can be applied at these larger scales, or whether the logic of collective action underlying CPR theory can be used to study cases involving large numbers of actors" (Fleischman et al., p.306). Some scholars have applied limited principles without trying to understand the complexity of the theory and undertaking an empirical comparison of theory with the cases (see, for example, Dietz et al., 2003; Keohane & Martin, 1995), while other scholars applied the theory at cross-scale commons but produced conflicting arguments (Armitage, 2008; Gruby & Basurto, 2013). Therefore, most scholars argue that the 'tragedy of the commons' is not always associated with the scale of power. In general, therefore, Stern (2011) recommends some revision and the addition of principles such as integration of science with local knowledge and cross-scale collaboration but does not fundamentally rule out the applicability of Ostrom's (1990) design principles at large-scale commons.

2.2.4 Challenges of Institutional Scale

A review of institutions is important because they are "perceived as both the problem and the answer to sustainable fisheries" (Jentoft, 2004, p. 138). There are various types of institutions operating at different scales. Thus, the extent to which they can be reconciled and become effective in natural resource management depends partly on the scale they are applied to (Dahl, 1994).

Cash et al. (2006, p. 3) define scales (also known as scalar dimension) as various dimensions of a phenomenon, while levels (also known as scalar levels)

are seen as parts of or units in a scalar dimension (Table 2.4). Temporal and spatial scales, for example, determine the effectiveness of institutions in shaping collective action. Moss and Newig (2010) argue that while at large scales such as the national (spatial) or annual (temporal), institutions often deliver effectiveness, they do lack participation. At the small scale, such as a local community (spatial), or daily (temporal), institutions increase participation, but they are not always effective in addressing cross-spatial problems.

With regard to the scale of institutions, Ostrom (1990, p. 53) outlines a three-level analysis for managing commons pool resources. Firstly, 'constitutional level' relates to governing the resources; this includes rules about how to make rules at a collective choice level. Secondly, 'collective level' relates to the implementation of decisions at management level; rules about how to and who can change rules at the 'operational level'. And lastly, the operational level relates to utilisation of the resources; rules about how to and who can access the resources.

Table 2.4: Examples of institutional scales, dimensions and levels

Scale	**Dimension**	**Level**			
Institutions	Formal	Constitutional		Collective choice	Operational
	Informal	Culture	Norms	Customs	Taboos
Temporal	Short Medium Long	Annual	Seasonal	Monthly	Daily
Spatial	Size	Large			Small
	Marine ecosystem	Ocean			Bay Lagoon Estuary
	Jurisdiction	Regional	National	Provincial	Local
Knowledge	Formal Informal	General		Science	Indigenous Local

Source: Adapted from Cash et al. (2006), Gibson et al. (2000) & Schlager and Ostrom (1992)

Institutions inherently have both temporal and spatial scalar mismatches, which shape conflicts and their effectiveness. While formal institutions can change in short temporal scale such as years and even days, informal or customary institutional changes tend to be incremental (Hall & Taylor, 1996; North, 1990). A written law, for example, can be conceived and changed in a

year or less, but traditions and religions can last for centuries. This means that rapid changes in formal institutions do not necessarily bring changes to informal institutions. Hodgson (2006, p. 6) clearly explains, “for laws to become rules, … they have to become customary”. Scott (1993) argues that this mismatch between formal and informal institutions is the root of conflicts in many fisheries.

Mismatches between formal and informal institutions shape their effectiveness. Formal institutions are more applicable at higher-level jurisdictions, such as regional and national levels, than informal ones and vice versa. However, this does not suggest that there is a hierarchy among institutions; informal institutions at the local level, for example, are not less significant than formal institutions. According to Young (2006), it is only the scalar applicability that distinguishes their roles; both formal and informal institutions can conflict but also co-exist and dynamically interact across spatial and temporal scales. However, at the large-scale commons, institutional interactions often lead to unequal and conflicting relationships, including in collaborative management (Fidelman et al., 2014; Mitchell, 2003).

2.2.5 Challenges of Decentralised Fisheries Management

Decentralised fisheries management has been seen as a way to empower local institutions and local people (Bene & Neiland, 2004; Pomeroy, 2003). Thus, studies (see, for example, Bene & Neiland, 2004; Ribot, 2003, 2005; Satria & Matsuda, 2004) about efforts to apply local institutions in natural resource management mostly focused on decentralisation reforms. In fisheries management Satria and Matsuda (2004, p. 1), for example, argue “decentralisation is considered the most appropriate form of fisheries governance in which to enable… a community-based fisheries management system”. These studies, together with pressure from development agencies and donors, have led many countries to decentralised fisheries management (Béné et al., 2010).

Decentralisation has multiple meanings, and this has led to disappointment over its outcomes (Agrawal & Ostrom, 1999). Decentralised governance is

defined as “the restructuring of authority so that there is a system of co-responsibility between institutions of governance at the central, regional and local levels according to the principle of subsidiarity” (Work, 2002, p. 1). According to Work, decentralisation “related to the role of, and the relationship between central and sub-national institutions, whether they are public, private or civic. This definition was based on Work’s (2002) study in many developing countries. He defines decentralisation as comprising other concepts such as the *deconcentration*, *delegation*, and *devolution*. By this definition, the focus of decentralisation is on building collaboration across tiers of government.

The World Bank developed a similar understanding of decentralisation, referring to earlier works of Rondinelli (1981), Cheema et al. (1983) and Rondinelli et al. (1989). However, other institutions, such as the OECD (1997), use devolution as the grand concept to refer to the transfer of authority. It recognises a continuum from centralisation to decentralisation with two fundamental forms of devolution: 1) decentralisation, where power is shifted from central government to democratically independent lower levels of government and (2) deconcentration, where power is shifted from higher levels to lower units of central government.

Work (2002, p. 2) and previously Rondinelli (1999, p. 2) categorise the concept of decentralisation according to the form of power transfer as follows. First, administrative decentralisation, which comprises deconcentration referring to the transfer of rights to undertake certain implementing responsibilities within a department of national government from higher-level units to lower level units or agencies for a short time where accountability tends to go upward, and *delegation* referring to a transfer of rights to undertake certain responsibilities from a department of national government to any unit or agency, not always its subsidiary. This tends to be temporary, although accountability to local people is stronger than that of deconcentration. Second, *political decentralisation* in the form of *devolution* refers to transfer of power from national governments to sub-national governments or other units to undertake full responsibilities of the latter domestic policies and management that lead to autonomous and independent units of government. Third, *fiscal decentralisation* refers to the transfer of power from national governments to sub-national governments or

other units to manage the latter's own sources of revenues to fund local policies and management. Finally, *market decentralisation* refers to transfers of authority and responsibility to the non-formal sector, where both private and civic sectors undertake planning, administrative and other functional responsibilities.

The pursuit of decentralisation seeks to realise several benefits. The existence of power at a local level enables local institutions to respond and adapt to local voices effectively and enhances local initiatives (Bene & Neiland, 2004; Ostrom, 1990; Pomeroy, 2003). In their study of decentralised natural resource management in many countries, Agrawal and Ostrom (1999, p. 473) support decentralisation "on grounds of increased efficiency, more thoroughgoing equity, and/or greater participation and responsiveness of government to citizens". Similarly, political decentralisation enables local people to control officials that show less commitment (Shah, 1999), strengthens local democracy (Hadiz, 2004) and addresses economic inequality among regions, political instability, and ethnic and religious conflicts (Hill, 2008; Rasyid, 2004). Decentralisation in these contexts focuses more on power-sharing between elites than institution-building (Clement, 2009).

Despite its promises, decentralisation practices have resulted in mixed outcomes (Clement, 2009). Ribot et al. (2006, p. 1865) underline the national government who design decentralisation to conserve and serve its interests through various strategies such as: "(1) by limiting the kinds of powers that are transferred, and (2) by choosing local institutions that serve and answer to central interests". Purwanto and Pramusinto (2018) confirm these strategies in the decentralisation policy in Indonesia. Other scholars (see, for example, Duncan, 2007; Fleischman, Ban, et al., 2014) highlight a lack of institutional and financial capacity and support for local actors to manage decentralised responsibilities. In Indonesia, Adhuri (2004) found that decentralisation strengthened communal property rights, but was captured by local elites for their personal benefit by trading with foreign fishers, an activity which Béné et al. (2010) found, was similarly undertaken by sub-national government officials; this was confirmed by Warren and Visser (2016). Newig and Fritsch (2008) argue that local-level institutions often have a greater incentive to

exploit natural resources than national governments. The interests of national and local elites often lead them to work together in exploiting decentralised natural resources (Agrawal, 2001; Bene & Neiland, 2004; Ribot, 2002).

Some scholars (for example, Béné et al., 2010; Satria & Matsuda, 2004) highlight fragmented marine management as one of several consequences of decentralisation. Béné et al. (2010, p. 334) found in Indonesia, "decentralised management seriously impedes any attempt at controlling the intensity of fishing activity, and, in particular, that of foreign fleets" that worked with autonomous sub-national government. They argue that there was a lack of incentives among sub-national governments to prevent fisheries depletion and enforce the law on illegal fishers. Moss and Newig (2010) link these problems to mismatches in the jurisdictional scale of government. The mismatches create incentives for small government units to exploit fisheries (known as competition spillovers) but it produces no disincentives to pollute because pollutants move across jurisdictional boundaries (known as pollution spillovers).

The failure of decentralisation relates to a lack of accountability of local officials. In his study of decentralised natural resource management, Ribot (2002, p. iii) notes that the outcomes of decentralisation are shaped by "representation - which is composed of powers and downward accountability - and management incentives". Ribot (2002, p. v) adds that if responsiveness reflects the relationships between the power of the elites and the voice of local resource users, then accountability reflects the relationships between outcomes and available sanctions. Responsive and accountable elites are only possible if there is a balance between the power of local elites on the one hand and the sanctioning power of the other. Adhuri (2005) confirms that in decentralised fisheries management in Indonesia the transfer of power to the community was captured by non-elected customary leaders who exercised power in the community due to their traditional status as royal families.

Lack of acknowledgement of customary management and exclusion rights is another common problem (Capistrano & Colfer, 2005). Larson and Soto (2008) found that most decentralisation reforms focused on acknowledging use rights (access and withdrawal of resources) of local people and failed to transfer

substantial power to local people through political and fiscal decentralisation. Agrawal (2001, p. 492) argues, "decentralisation can be said to have occurred only when governments devolve property rights over resources that conform to the collective choice and constitutional levels," and is not limited to the operational level. Without having power at collective and constitutional levels, to determine how and who can exercise power, local people are only users; they do not have power to manage access to resources. These three levels of institutions correspond to the continuum of commons property rights according to Ostrom (1990).

Therefore, while some developing countries implemented decentralisation in the late 1990s and early 2000s, some other developed countries that had undertaken decentralisation since the 1980s, undertook recentralisation with a variety of arguments (De Vries, 2000). For example, a scalar problem of local rules is the lack of capacity to manage cross-boundary challenges of migratory fisheries and spills-over (Newig & Fritsch, 2008), discussed in the following section.

2.2.6 Challenges of Large-Scale Marine Commons

The challenges of managing fisheries intersect with the size of marine commons, which are spread horizontally across geographical and ecological spaces and vertically across levels of jurisdiction (Berkes, 2006; Young, 2002a). The challenges are institutional misfits, cross-scale linkages and external drivers (Berkes, 2006; Lemos & Agrawal, 2006; Young, 2003).

Institutional misfit

The term 'institutional misfit' refers to the misalignment of institutions with the scalar dimensions of a socio-ecological system (Cash et al., 2006). This system treats humans as an integrated part of nature, where both have linked relationships (Berkes, Folke, & Colding, 2000). Thus, the misalignment can happen between institutions in terms of the interrelationships with both humans and nature.

The misfits are caused by, among other things, dynamic and complex

ecosystems - such as unpredictable future changes and poor understanding of natural phenomena - and divided political boundaries. Misfits can be the products of active human efforts such as the division of political boundaries and by natural events such as changes in the paths of migratory fisheries across different jurisdictions (Brown, 2003b; Folke et al., 2007; Young, 2002b).

In some cases, misfits are products of political outputs resulting from efforts to pursue identity-building and political benefits. With respect to the particularity of ethnic identities and typical needs, for example, many governments have established ethnic-based autonomous districts. This policy has led to divided natural resource management, difficult coordination, and unequal distribution of costs and benefits or spill-overs (Cash et al., 2006; Moss & Newig, 2010; Satria & Matsida, 2004). This misfit is shaped by short-term political cycles and outcomes which conflict with environmental planning in the larger and longer scale (Young, 2003). This suggests that efforts to incorporate local voices in the case of decentralised marine management and the creation of new jurisdictions based on ethnic jurisdictions can produce misfits.

Misfits in environmental governance arrangements originate from conflicting objectives and interests among stakeholders in promoting environmental outcomes (Pittman, Armitage, Alexander, Campbell, & Alleyne, 2015; Schroeder, King, & Young, 2008). At the local level, misfits arise from uniform treatment of communities as homogenous units, which fails to address the uniqueness of certain groups (Folke et al., 2007). At the global level, misfits happen when efforts to bring global long-term potential benefits, fail to exert global supports to minimise local short-term costs that are mostly borne by local people, such as small-scale fishers. These misfits are common in marine conservation, which aims to bring the benefits of global scale, but often limits the fishing activities of small-scale fishers.

These misfits limit the effectiveness of institutions as parts of the natural resource boundaries that exist beyond jurisdictional boundaries within which institutions are applied. Common examples are migratory fisheries, whose ecosystem is across countries. As a result, there are not only gaps between institutional and natural boundaries but also overlaps between institutions

(Meadowcroft, 2002).

Existence of cross-scale linkage

Challenges in managing fisheries originate from a close dependence and the causal relationships between marine environmental systems and resources (Cash et al., 2006). Transboundary externalities such as pollution from marine transportation in international waters and increasing marine temperature, for example, bring great impacts on ecosystems across spatial and temporal scales (Moss & Newig, 2010). However, because of the marine ecosystem multi-scalar characteristics, it is difficult to establish cause-effect relationships. These difficulties, according to Lemos and Agrawal (2006) lead to two implications for environmental governance: unequal distribution of costs and benefits and difficulties in fisheries management.

The first implication relates to the unequal distribution of benefits and costs of environmental outcomes as the result of loose cross-scale causes and the consequences of environmental issues. Trans-boundary costs and benefits of marine pollution and marine protection add complexity to environmental governance (Berkes, 2006). However, it is difficult to identify and measure contributing factors, benefactors and impacts across spatial and temporal scales (Cash et al., 2006). Mitchell (2003) found that many global environmental initiatives have failed to gain strong support and thus have not delivered the expected outcomes because of these difficulties.

Some institutional regimes have exacerbated existing inequalities among non-state actors (Cash et al., 2006, p. 4). These regimes can be found in many externally-imposed marine institutional initiatives that often fail to incorporate the voice of local resource users such as sea-nomadic fishers (Cinner et al., 2013; Crawford et al., 2004). Kusumawati and Visser (2014), for example, found that many donor-based projects in Indonesia tend to include local elites but exclude local resource users. This has resulted in the further marginalisation of local users and a lack of knowledge about the impact of projects on local people. This suggests that better information about the impact of an initiative on the stakeholders across scales can only be available through the involvement of the stakeholders.

Influences of external drivers

External drivers such as global markets, climate issues and ecological policies of national governments influence the effectiveness of self-governance among local communities (Folke et al., 2007; Stern, 2011) . Berkes (2006) argues that these are unavoidable as there is hardly any community-based management that is free from the influence of political, economic and natural drivers. The effectiveness of community-based management, therefore, partly depends on its ability to respond to these drivers.

Identification of the drivers in some cases is easy, especially those that relate to harvesting activities and trade to meet global markets. However, Lebel et al. (2006) note that the dynamic and complex characteristics of marine resources and the lack of institutional connection, make it difficult to identify and influence how these drivers behave. For example, outsider fishers have been a common problem for local fishers in many Southeast Asian countries, making control and compliance at the local level difficult (Clifton, 2012).

Other scholars (Blaikie, 2008; Mullins, 2004; Peluso, 1992) link environmental changes at the local level with the role of economic systems at the national and global levels. Fleischman et al. (2014, p. 310), for example, found in Indonesia, "the influence of macro-level historical and political-economic factors - such as governments seeking to extract rents or votes, large corporate interests, macroeconomic crises, and unequal power relations between communities and the state on local collective action". This suggests that it is not only the level at which power is situated that matters in natural resource management, but also other external factors such as political and economic interests across jurisdictional levels.

2.2.7 Collaborative Large-Scale Marine Governance

The difficulties of applying local-level rules to manage large-scale commons have led to the development of various planning approaches to decision making such as collaborative planning, collaborative management and collaborative governance (Ansell & Gash, 2007; Emerson, Nabatchi, & Balogh, 2011; Pomeroy, 2003). However, there are ambiguities about collaborative

governance because it has a variety of purposes and terminology, causing confusion among scholars and practitioners. This is because "collaboration evolves over time in response to different demands" (O'Leary & Bingham, 2007, p.104) . In the Aotearoa New Zealand context, for example, Davies et al. (2018, p. 124) state, "MPA [marine protected areas] planning has evolved from previously adversarial processes into more collaborative ones that are accompanied by improvements in efficiency and broad support for MPA implementation". This new approach, like that in many other countries (Pomeroy et al., 2015), has been shaped by global changes in the management goals of MPAs to include social aspects, besides ecological aspects (Davies et al., 2018). The practice of collaborative governance has evolved and differs across temporal scales.

Despite the differences, Von der Porten and De Loë (2014) argue that most collaborative approaches have similar key ideas. They define collaboration after Gray's (1985, p. 912) work as "the pooling of appreciations and/or tangible resources, e.g., information, money, labour, etc., by two or more stakeholders, to solve a set of problems which neither can solve individually". This definition highlights the basic meaning, justification and purpose of collaboration - the differences in the resources of stakeholders across organisations that facilitate them to pool them for the same purposes - upon which scholarly literature has been developed along different paths. However, it does not elaborate on the decision-making approach that distinguishes planning approaches.

Ansell and Gash (2007, p. 544) regard collaborative governance as collective consensus-based decision-making. Their definition of that collaborative governance has six key criteria: "(1) the forum is initiated by public agencies or institutions, (2) participants in the forum include non-state actors, (3) participants engage directly in decision-making and are not merely "consulted" by public agencies, (4) the forum us formally organized and meets collectively, (5) the forum aims to make decisions by consensus (even if consensus is not achieved in practice), and (6) the focus of collaboration is on public policy or public management" (2007, pp. 544-545).

However, this definition, according to Emerson et al. (2011), focuses on state-led formal collaborative initiatives and does not involve multiple stakeholders. To address this deficiency, Emerson et al. (2011, p. 2), define collaborative governance broadly as "the processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished".

Besides power-sharing, according to Armitage (2008), collaboration should focus on building collective capacity through inclusiveness, deliberation, joint decision-making, and learning and experimentation. Eppel (2013, p. 9) adds further that collaboration "means to co-labour, to co-operate to achieve common goals, working across boundaries in multi-sector relationships". Berkes (2010, p. 492) argues that collaboration should be characterised by "inclusion, power-sharing and joint decision-making" with emphasis on the equality of relationship, instead of "a subject-object relationship". This suggests that collaboration involves a fair sharing of resources such as funds and knowledge to empower one another.

The process of collaboration is dynamic because of the diversity in the stakeholders (Pomeroy, 2003). It is shaped by the stakeholders' socio-economic and political status, level of trust and conflict, organisational culture, operational methods, and the complexity of the resources and their problems, and changes across differed scales (O'Leary & Vij, 2012; Ferse et al., 2010; Hanna, 1995; Sen & Raakjaer-Nielsen, 1996). Collaboration can be constructed and changed dynamically as the collaborating parties start to learn, negotiate, and build trust (Kooiman & Jentoft, 2009).

Trust is a significant element in fisheries collaboration (Berkes, 2009; Harkes, 2006). Stern and Coleman (2014) argue that collaboration starts and evolves around building trust. A successful collaborative initiative between government and local resource users results in the later trusting that the government considers their voices. Similarly, the government trusts local resource users to comply with the agreement reached. Ameyaw (2017, p. 39) in his study of

fisheries conflict in Ghana found that "when parties trust each other they can more easily resolve conflicts but when they do not trust each other, their resolution is more difficult". Trust strengthens collective action and decreases transaction costs (Ostrom, 2007) as people are willing to contribute, collaborate and comply with agreements. However, building trust takes time, particularly in post-conflict settings (Stern & Coleman, 2014).

Multilateral Environmental Agreements (MEAs) are examples of intergovernmental initiatives involving states and non-state organisations at the super-national level to address environmental problems (Lemos & Agrawal, 2006; Sonnenfeld & Mol, 2002). Piñon Carlarne (2008, p. 455) adds that MEAs include "the broad domain encompassing the negotiating, agenda-setting, norm-creating, and rule-making" beyond a state level. According to Finkelstein (1995, p. 369), this governing mode is about "governing without sovereign authority, relationships that transcend national frontiers… doing internationally what governments do at home". This mode of governance, Berkes (2010, p. 491) adds, lead to "politics, sharing of rights and responsibilities, and setting objectives and the policy agenda". MEAs enable the member countries to address shared environmental challenges that cannot be addressed at the national level such as institutional misfits, cross-scale linkages and the influence of external drivers (Berkes, 2006).

As supra-national institutions, MEAs can be seen as collaborative initiatives based on the Ansell and Gash's (2007) definition, but according to Emerson et al. (2001), MEAs are only intergovernmental initiatives because they do not involve and/or marginalise the wider community. In fact, only a few intergovernmental initiatives adopt collaborative governing approaches or success to collaborate (Mitchell, 2003). In their study of fisheries governance, Davis and Ruddle (2012, p. 247) argue that many governments and international donors have misused power-sharing initiatives to "download responsibility and costs onto citizens". White (1996) found in her study of participation in development in Bangladesh that the government and donors continue to dominate decision-making. The domination of these institutions strengthens market norms but weakens local community values such as a trust,

which is an important element for collaboration (Sonnenfeld & Mol, 2002; Knox et al., 1998).

From Gramsci's concept of hegemony, the marginalisation of local people by either the state or global donors, or both, in governing natural resources results from "common sense" ideas through popular consent and consensus which justify the ideas of the dominant actors as acceptable to the whole society (Levy & Egan, 2003; Maxton-Lee, 2017). Hegemony and marginalisation can take in forms such as marine conservation areas and privatisation of fisheries to address the depletion of fisheries. This concept of hegemony sheds light on the persistence of exploitative economic relations between classes (Song, Bodwitch, & Scholtens, 2018) and support for the formation of a hegemonic alliance through moral and intellectual ideologies by institutions of civil society such as the media, the church and the academia (Levy & Egan, 2003). Thus, it is not only economic but also non-economic forces that lead to the formation of hegemonic blocs involving the state, market and civil society on one hand and marginalised groups on the other hand. Gramsci's idea of hegemony, as stated below, is reflected in the states domination and donors Davis and Ruddle (2012) highlight above:

> Hegemony is a way to conceptualise not just the importance of the material nature of the ruling class's domination, and the evidence it does so, but the forms of class domination reproduced through 'civil society' in the form of norms, culture, thoughts, and ideas (e.g., the "ethical-political") (Gramsci 2000: 189-199).

The practice of collaboration, thus, has been criticised for promoting hegemony of the state and capital through popular consent (Maxton-Lee, 2017). In the context of natural resource management, it can facilitate the transfer of resource management to private institutions through a variety of regulatory policies, which are seen as acceptable 'common sense". Davis and Ruddle (2012) note that changes start by transferring responsibilities and costs to the fishers, labelled as users and stakeholders. It then imparts market-based principles into the resources and livelihoods and converts social and cultural contexts into a private-sector economic setting and logic concerned with property rights, economic efficiency, costs and incomes. In turn, (Davis & Ruddle, 2012) argue the fishers adopt market-based views as they have a limited capacity to resist

the common sense paradigm of market-based management and exploitation of resources and their livelihoods. As market principles become new values in the community, fishers start to view one another and their resources from a cost-benefit perspective (Jentoft, 2004). Recent scholars (Bennett, Govan, & Satterfield, 2015; Pedersen et al., 2014) label any policies, such as conservation and eco-tourism, that re-allocate marine space and resources away from their initial users and right holders as "ocean grabbing".

Collaborative governance in fisheries has been shaped by the ecosystem approach to fisheries management, which is seen as the appropriate approach for managing fisheries because it requires a comprehensive management of socio-ecological, economic and political aspects. As a result, collaboration involves many participants across government tiers, private sectors and non-government organisations (Imperial, 1999) but does not necessarily solve the difficulties of local-level rules (Evans & Klinger, 2008). Biermann et al., (2009, p. 17) note that governance regimes in large-scale environments "consist of distinct parts that are hardly ever fully interlinked and integrated" which often produces low trust and weak collective action. Imperial (1999, p. 456) highlights transactional costs related to the increased number of participants, interactions and scope of management, and a low level of trust. He classifies the transactional costs in managing large-scale environments into information costs (such as collecting and managing information), coordination costs (such as planning, monitoring and enforcing agreements) and strategic costs (such as free riding and rent seeking). As a result, MEAs initiatives are not always able to solve 'institutional misfits' in local-level environments.

Young (2002b) critiques the assumption that high-level institutions can address environmental problems more effectively than local-level institutions. He adds that "solving the tragedy of the commons at the local level is fundamentally a matter of self-regulation" but, at the high level, "regulation is a two-step process" involving law making and law enforcement (Young, 2002, p.152). This fact influences ownership, trust and free-riding across jurisdictional levels. A lack of participation can lead local people to "engage in a game of 'cops and robbers' with outside authorities" (Ostrom, 1999b, p. 281). Young (2002:149) cautions, "we should be particularly careful to avoid assuming unreflectively"

that high-level institutions can solve environmental problems in the same way as local institutions. The difficulty associated with regulating and coordinating high-level governance regimes has been noted by many scholars (Biermann et al., 2009; Raakjaer et al., 2014). Therefore, Najam (2005) rejects the idea of improving organizational approaches and highlights the benefits of having fragmented governance, that is, multiple governance regimes which, according to Biermann et al. (2009), can decrease differential gaps among participants, and facilitate progressive agreements.

Mitchell (2003) confirms that many intergovernmental initiatives lack ownership and compliance due to the uncertainty and failure of sciences to understand the dynamics and uncertainties surrounding the environment. Cash et al. (2006) label this phenomenon as ignorance where, for example, the uses of science at the national level fail to recognise the contribution of local-level actions including indigenous knowledge for global long-term problems. Similarly, Berkes (2002) highlights the difficulty of translating science in large scale environments into practical and useful local actions. Galaz et al. (2012, p. 22) add that cross-level "interactions are not well understood scientifically; and they are difficult to match or "fit" institutionally due to their multilevel (local–global) interactions". As a result, some institutional regimes in marine commons strengthen existing inequalities among stakeholders (Cash et al., 2006, p. 4), leading to domination and lack of support (Young, 2006). Thus, at the global level, environmental governance has turned into long-lasting negotiating processes, with no meaningful implementation and outputs.

In addition, intergovernmental initiatives, such as MEAs, can diminish democratic values, in which power does not derive from the people's mandate as voters in elections (Ansell & Gash, 2007; Ribot, 2002). Ribot (2002, p. v) adds that while responsive representatives should have the ability to make decisions and take action, accountable representatives should enable users to make demands and impose sanctions on those failing to perform. However, collaborative initiatives shift the role of the people from "voters" to "co-creators" (Glavovic, 2014, p. 357), but often lead the government and non-state actors to dominate decision-making (Young, 2002), putting the people as agents, instead of principals (May, 2015; Sørensen & Torfing, 2009). As the agents, people have

to comply with the decisions that are made by those who are not elected; they lose their democratic rights as the principals to hold those who exercise the power accountable. Fleischman et al. (2014) confirm from their research on several of large-scale commons that problems around democratic participation and representation in environmental governance has led to resistance from fishers. This leads to resource depletion because, as Jentoft (2000) points out, fishers see the involvement of other parties as illegitimate. These scholars reinforce the findings of other research (Colchester, 2001; Patlis, 2007) that concentration of power in high-level institutions has encouraged patronage between elites resulting in the abuse of power, exploitation of resources and denial of local institutions.

Fleischman et al. (2014) argue that resource sustainability not only depends on the level at which power for managing the resources situate, it can also result from other factors such as a corruption which can be found across levels. Scholars highlight political and economic interests in the natural resource-based policies of the national government, the demand from global markets for natural resources and the roles of civil society in empowering local people; all of which influence the sustainability of resources (Fleischman et al., 2014; Ostrom et al., 1999; Edwards & Steins, 1999). This means that intergovernmental initiatives, like local institutions, can face difficulties governing commons. However, there is a lack of research on the effectiveness of intergovernmental initiatives, particularly in managing large-scale marine environments and their impact on CFM.

2.3 Customary Fisheries Management

Having reviewed the characteristics of marine commons and the challenges of governing approaches to fisheries, this section explores the characteristics of CFM and how it has been integrated into fisheries management to understand whether it can be applied within large-scale marine management regimes. Many scholars (Aswani & Hamilton, 2004; Cinner & Aswani, 2007) have studied the qualities of CFM that shape its efficacy in managing fundamental challenges of marine commons, in particular excludability and subtractability. Aswani (2005)

found in the Indo-West Pacific region that CFM is suitable for managing fisheries in local communities because of the existence and adaptability of property rights-based fisheries management. Cinner et al. (2012) confirm the existence and adaptability of CFM's design principles across the region, which shape CFM's applicability across scales of management and space. The next section discusses property rights-based resource management, design principles and their adaptability that shape CFM's applicability.

2.3.1 Property Rights-based Fisheries in Customary Fisheries Management

The rules of CFM vary among communities (Aswani & Ruddle, 2013, p. 466) but generally include control of fish harvesting based on the areas and time, types and sizes of fisheries, and types of gear; and allocation and transfers of rights according to gender, sex, families, clans and tribes (Aswani, 2005; Cinner, Basurto, et al., 2012; Friedlander, 2018). These rules, according to Ruddle (1996), have characteristics such as excludability, transferability and security of title. This means, as Cinner and Aswani (2007) found in their study of CFM in the Indo-West Pacific region, that CFM shares some characteristics of modern rights-based resource management.

Harkes and Novaczek (2000, p. 4), in their study of CFM in Indonesia, found that the rights-based fisheries rules could be categorised into three institutional levels. Firstly, operational rules regulate how fishing is undertaken. Collective rules establish decision-making processes regarding operational rules. Constitutional rules specify parties and their roles in "decision-making, conflict resolution, execution of ceremonies and enforcement". These multi-level rules for fisheries management share similarities with rules outlined by Ostrom (1990).

The rules of CFM, however, are not established for conservation goals only; the rules are associated with socio-cultural contexts, ethnicity and kinship, attachment to local places and cyclical events of local communities (Adrianto & Irving Hartoto, 2009; Cinner & Aswani, 2007; Friedlander, Shackeroff, & Kittinger, 2013). Pinkerton et al. (2014) found from observing communities in

British Colombia that these are some essential components for successful co-management. Another major difference between CFM and state-based rules in regard to marine conservation, as Cinner and Aswani (2007) found in the Indo-West Pacific region, is that while the former tends to be temporal, the latter recognises total closures. CFM is designed to meet the needs of the community during certain cycles such as ceremonies, celebrations, crises, and seasons. During these times, local people are allowed to harvest the resources. Thus, the function of conservation in CFM is not for the fisheries itself, but more for the needs of the community in dealing with needs of food, uncertainties and difficult seasons.

These attributes of CFM have stimulated many studies and driven efforts to integrate CFM with modern property rights-based resource management in many countries (Aswani, 2005; Aswani & Hamilton, 2004; Aswani & Ruddle, 2013; Friedlander, 2018). However, Cinner and Aswani (2007, p. 209) found that most efforts failed because of differences in their goals, a lack of understanding about fundamental characteristics of CFM and modern practices, and differences in application strategies. Cox and Elmqvist (1997) remind us that it is important to understand that CFM is different from modern property rights-based resource management in undertaking conservation. Equally important to understand is the qualities of CFM that explain its applicability in managing subtractability and excludability of large-scale marine commons.

2.3.2 Institutional Design Principles of Customary Fisheries Management

Studies of CFM and its application in the management of large-scale marine commons often start with Ostrom's (1990) institutional design principles for commons (Berkes, 2005; Cinner, Basurto, et al., 2012; Jones, 2012). These design principles have been widely tested and validated (e.g. Cox et al., 2010). Ostrom (1990) focused her research on small-scale self-governing community-based institutions; she does not clarify and distinguish these institutions from CFM, but there have been many studies of CFM looking at its design principles.

The applicability of CFM to large-scale marine commons is also linked to its compatibility with an ecosystem approach to fisheries management (Aswani & Ruddle, 2013). This principle is in line with CFM, as Aswani and Ruddle (2013, p. 465) claim that CFM treats "territorial domains as being integrated, with terrestrial and marine spheres perceived as forming a continuum". Similarly, Berkes et al. (1998) add that local people believe that there are linkages and dependencies between various socio-ecological changes across terrestrial and marine spheres. The belief shapes CFM rules such as access and withdrawal of resources; the decision to open or close access to fisheries, for example, is adjusted to the harvests of terrestrial farms. Aswani and Ruddle (2013, p. 465) conclude "all these are core management practices in [ecosystem approach to fisheries management] plans". This suggests that CFM can be applied in large-scale marine environments.

The applicability of CFM to large-scale marine environments can be examined in the fishing activities of migratory fishers, also known as nomadic fishers, in many Indo-West Pacific countries (Clifton, 2012; Stacey et al., 2008). These fishers possess accumulated traditional ecological knowledge about the characteristics of marine environment and fisheries across boundaries, shaping their continuous migration and access to fisheries across marine areas and countries (Campbell et al., 2013; Clifton, 2012). Aswani and Ruddle (2013) confirm from their study in the Asia-Pacific region that CFM recognises ecological linkages that strengthen Ostrom's (1990) nested system principle and facilitate implementation of an ecosystem approach to fisheries management.

Despite the claims about the usefulness of CFM for managing large-scale marine resources, some researchers highlight difficulties implementing Ostrom's (1990) institutional design principles for managing common pool resources. Berkes (2005) highlights the difficulty of traditional ecological knowledge to deal with certain fisheries issues such as a stock assessment of migratory fisheries. Jones (2012) argues that the dynamics of marine commons pose difficulties establishing Ostrom's (1990) principles of 'congruence between appropriation and provision of rules and local conditions'. It is also difficult to define and enforce property rights beyond the local level to include communities with different practices of CFM (Brown, 2003a; Cinner & Aswani, 2007; Folke et al.,

2007; Musole, 2009; Soliman, 2014). Thus, principles of 'proportional equivalence between benefits and costs', 'clearly defined boundaries areas and resource users', 'graduated sanctions' and 'accountability of rule monitoring and compliance', cannot be achieved in the case of large-scale marine commons. This suggests that only some of Ostrom's (1990) design principles for commons are applicable for managing large-scale marine commons.

The key challenge in managing large scale commons is in applying the design principles without diminishing collective action. Cinner et al. (2012) provide an interesting argument about the capacity of CFM in Indonesia to undertake institutional change. In their research examining the applicability of the design principles to numerous customary fisheries, they found that fishers lacked institutional linkages to organisations at the level of large-scale commons, but they had "flexibility and autonomy" which indicates that they nevertheless possess adaptive capacity to undertake institutional change and adjustment to large-scale commons (2012, p. 1). This suggests that although the principles were designed from small-scale commons, they can be adjusted to large-scale ones. However, they do not see how flexibility can work at large scales without losing the autonomy of local communities.

2.3.3 Adaptability of Customary Fisheries Management

Some critics of CFM have focused on its lack of adaptive capacity to cope with continuous changes in socio-ecological factors (Aswani, 2002; Kenneth et al., 1992). Changes in CFM, like other types of informal institutions, are gradual within a long period, different from those of formal institutions which can change in the short time (Hall & Taylor, 1996; North, 1990). In his study about institutions in fisheries and their change, Jentoft (2004, p. 141) argues:

> Institutions often change incrementally rather than through a grand design… Fisheries management systems may well follow this pattern [change incrementally]. They develop gradually, one step at a time.

Customary fisheries management is criticised for its inadaptability with modern rights-based resource management in undertaking conservation. The arrangement of property rights in CFM, for example, as Berkes (2004 & 2005) states, focuses on maintaining continuous productivity of fisheries to meet

fishers' need for food. Customary fisheries management recognises temporary closure of access to fisheries but not a total closure for conservation, as highlighted in the public property regime (see, for example, Cinner & Aswani, 2007). However, scholars (Berkes, 2006; Cinner, 2005) claim that emerging challenges have encouraged local fishers change their practices. Berkes (2006) points out that local fishers often have difficulties maintaining productivity due to problems such as increasing harvests by outside fishers. Cinner (2005) argues that local fishers continually adapt CFM to protect fisheries from outside users and manage conflicts between fishers. For example, local fishers adopted property-rights based fisheries management, such as transferability to share fisheries with their neighbouring communities. In Aceh, Indonesia, Quimby (2015) highlights the existence of unarticulated practices to share fisheries in open access marine areas among neighbouring communities to deal with decreasing fisheries and to avoid conflicts. This strategy builds ownership of fisheries across fishing communities.

Increasing challenges to CFM, according to Berkes (2006), do not reduce the ability of CFM to manage the dynamics of marine environments. Harkes and Novaczek (2000) found that changes and the decline of CFM do not unnecessarily lead to ineffective CFM. They claim that, in some communities, rules are dynamically adapted in cooperation with higher-level organisations, such as churches, in order to revive them. However, in undertaking an adaptation, Cinner and Aswani (2007) caution against codifying unwritten rules into laws, as Hviding (1998) found that in some countries that codification of CFM diminishes its adaptive capacity.

Cinner et al. (2012) confirmed Harkes and Novaczek's (2000) finding about the existence of Ostrom's (1990) design principles in CFM within the Indo-West Pacific region. Scholars argue that CFM in the region "facilitates rapid adaptive response to changes in ecological or social conditions" (Cinner, 2005, p. 2) and develops capacities to manage and mitigate conflicts, in order to "ensure community harmony and continuity" (Aswani & Ruddle, 2013, p. 464). These capacities reflect the requirements for resilient and robust governance. Aswani and Ruddle (2013, p. 464) add that although CFM "is context-dependent and vulnerable to endogenous and exogenous transformations, in principle it can

both sustain biological resources and be successfully adapted to modern fisheries management".

There are several challenges to the effective implementation of CFM in managing large-scale marine commons, but some studies indicate CFM potential. Berkes (2004, 2005), for example, argues that CFM focuses more on serving social-cultural values than on conserving fisheries, but Cinner and Aswani (2007) found that CFM possesses characteristics of modern rights-based resource management, enabling its integration and co-existence with modern rights-based resource management. Some scholars (Hall & Taylor, 1996; North, 1990) highlight that changes to informal institutions, including re-introduction of customary rules that have declined after a long period of denial, require a long time to be effective. Furthermore, the fact that CFM is locally based complicates its adaptation and re-implementation in large-scale marine commons where there are multiple and conflicting fisheries practices across small fishing communities (Novaczek, 2000; Cinner, 2005; Berkes, 2006). These suggest that the effectiveness of CFM implementation may not be observable in the short run and CFM requires a long period of support from the government to deal with external challenges.

2.4 Towards a Framework for Using CFM in Marine Common Management

The literature identifies the characteristics of marine commons and their governing challenges (Ostrom, 1990; Berkes, 2005, 2006), particularly the challenges for CFM in managing them (Aswani, 2005; Cinner & Aswani, 2007; Cinner, Daw, et al., 2012). Marine commons, particularly large-scale marine environments, are more complex and dynamic than local commons because of their interconnection and the migratory nature of the resources (Berkes, 2006). These characteristics of marine commons pose difficulties for CFM. However, studies about the applicability and adaptability of CFM have mainly focused on small-scale marine commons (Cinner, 2005; Harkes & Novaczek, 2000). Yet, scholars are divided about their effectiveness in managing the commons at the local level (Armitage, 2008; Berkes, 2006; Jones, 2012).

At the regional and international levels, intergovernmental initiatives to manage large-scale marine commons have produced mixed results. However, the purposes of collaboration can vary across stakeholders. Many collaborative initiatives have been criticised for problems such as lack of compliance and effectiveness at both local and global levels (Cash et al., 2006; Mitchell, 2003). Some studies have looked at the integration of CFM with formal fisheries management at the national level. However, Cinner and Aswani (2007) argue that only a few efforts successfully integrate them due to a lack of understanding about fundamental differences between CFM and modern practices, and differences in the purposes and application methods of integration. More importantly, there appears to be no research examining the incorporation of CFM within the MEAs for marine resources. Scholars recommend an integration of local practices with formal rules, but only a few design principles of common pool resources are applicable and there has been no successful effort to integrate them at large-scale marine commons (Fidelman et al., 2012; Baker et al., 2013).

A gap that exists in the literature relates to a lack of research examining the characteristics of CFM, including both its property rights-based management and its design principles, to understand their conceptual underpinnings and applicability in large-scale marine environments. Existing studies have only looked at one of these elements without combining them. Thus, the studies do not provide a strong case to integrate CFM with fisheries management and apply CFM to large-scale marine commons.

The role of government at all tiers that shapes CFM is another gap in the literature. Most studies focused on CFM practices that are still active along with formal fisheries management. No study has been undertaken to understand the efficacy of CFM that has been in abeyance after a long period of marginalisation by the national government. Similarly, the literature reviewed here does not address tensions among government tiers that impact on the application of CFM as a result of changes to the level of government at which fisheries are managed. This approach excludes some government tiers from fisheries

management. These are challenges brought by MEAs that have not been addressed in previous studies about CFM.

2.5 Principles for Applying CFM to a Large Marine Common

This review identifies challenges to managing marine commons related to its characteristics, particularly property rights-based resource management and design principles, and governing approaches in both small and large-scale environments. Many empirical studies confirm the existence but also the absence of these characteristics in CFM across many communities in the Indo-West Pacific countries (Aswani & Hamilton, 2004; Cinner & Aswani, 2007).

Various studies have explored the nature of common pool resources and challenges for governing them, particularly excludability and subtractability (Hardin, 1968; Berkes 2005; Acheson, 2006). These challenges are greater in large-scale marine commons because of the complex and dynamic nature of fisheries and marine environments. Challenges such as institutional misfits, cross-scale linkages and external drives require multiple management regimes and stakeholders across, administrative spatial and temporal scales (Berkes, 2005; Lemos & Agrawal, 2006).

Thus, some scholars have tried to integrate management regimes, particularly CFM with formal management regimes in order to minimise conflicts and maximise their effectiveness (Aswani & Hamilton, 2004; Cinner & Aswani, 2007). Some studies explore the challenges of institutional scales that hinder their integration and collaboration. Other scholars (Ostrom, 1990; Cox et al., 2010, Trimble et al., 2015) have tested and validated design principles of local rules for managing natural resources, including fisheries, which can guide the integration. However, most studies focus on small-scale marine environments. There has been no research undertaken to identify their existence and compatibility in large-scale marine commons in the developing country contexts, particularly under MEAs in countries that have devolved fisheries management to sub-national government.

Having critically reviewed the literature, successful efforts to examine how CFM can be applied in the management of large-scale marine management regimes need to:

1) Understand the fundamental characteristics and differences of both regimes,
2) Clarify the intention, its impacts and the mechanism to address them,
3) Address conflicts arising from changes to the scale of regimes,
4) Focus on the long-term commitment to empower customary communities to strengthen their self-governing capacity.

This thesis therefore focuses on how CFM has been recognised in the CTI, which, as noted in Chapter 1, is a recent MEA, established to manage a large-scale marine environment in the Indo-West Pacific. The following chapter sets out the method for assessing the applicability of CFM in large-scale marine areas.

Chapter 3 Research Design and Methods

3.1 Introduction

The previous chapter identified the characteristics of customary fisheries management (CFM) for marine management in general, and for large-scale marine management regimes. This chapter describes means to assess how CFM is applied in large-scale marine management regimes in developing countries. Firstly, it considers the rationale for selecting qualitative case study research and reviews the institutional analysis and development (IAD) framework. It then outlines the reason for selecting Rote Island, Indonesia as a case study, and presents the IAD conceptual framework before data collection and analysis methods are outlined. Research ethics are outlined, followed by a summary of this chapter.

3.2 Qualitative Case Study Research

To understand how developing countries apply CFM in MEAs, this study examines the institutional characteristics of CFM within its social-ecological contexts, and its applicability to fisheries management in large-scale marine environments. A challenge to applying CFM to large-scale environments is the uniqueness of CFM in different local communities in different countries. Therefore, this study uses a qualitative research design to understand its uniqueness and produce rich examination within its contexts (Creswell, 2014; Miles, Huberman, & Saldaña, 2014). This approach, as O'Leary (2014, p. 130) argues, allows researchers to use various research design strategies, adjust to the contexts and examine phenomena in their natural setting to allow "an intimate understanding of people, places, cultures, and situations".

This study adopted a case study approach because, as O'Leary (2014) argues, it enables an understanding of the complexity and particularity of CFM. In addition, following Yin (2014), this study meets the requirements to use a case study research because: "(1) the main research questions are "how" or "why" questions; (2) a researcher has little or no control over behavioural events; and

(3) the focus of study is on a contemporary (as opposed to the entirely historical) phenomenon" (Yin, 2014, p. 2).

This study focuses on gathering information "held by the few rather than the many" (O'Leary, 2014, p.181). O'Leary's view is challenged by Gerring (2004), who argues that the size of a case can shape the trade-off between comparability and representativeness. A single case study allows comparability, but it lacks representativeness, while multiple cases can improve representativeness, but they lack comparability. Yin (2014) shares this argument and suggests undertaking a comparative (cross-case) analysis involving many cases or a case at several levels. This study does not involve multiple cases in many contexts, but it does focus on the applicability of CFM in a MEA across jurisdictional levels.

The analysis of a phenomenon across different layers in a case enables researchers to assess the case while understanding different contextual factors influencing the phenomenon (Baxter & Jack, 2008). Dyer Jr and Wilkins (1991) argue that many classic studies that have advanced knowledge in various fields of the social sciences used a single case study. In response to critiques of a single case study, such as by Eisenhardt (1989) who advocated for multiple case studies, Dyer Jr and Wilkins (1991) highlight the trade-off between having a comparative understanding and the deep insights of social contexts. This suggests that the more contexts involved, the less deep the contextual insight covered. Researchers focus on what is common across cases leading to favouritism to highlight general constructs over contextual ones. As a result, they added that there would be a gap in understanding the uniqueness of a case from the inside because researchers only possessed thin description, instead of deep contextual dynamics, insufficient to draw generalisation across cases. These are some reasons for not using multiple comparative case studies.

In the case study approach, researchers do not interfere with the phenomenon, but build close relationships to develop a deep understanding of the uniqueness of the case. This principle contrasts with other research approaches such as surveys and experiments in which results from representative samples of the population are generalised to the whole population. Therefore, the findings of

this research about implementing CFM in the new regime for managing the CTI are context-specific and thus generalisation should consider contextuality.

3.3 Institutional Analysis and Development Framework

By their very nature, local CFM regimes exist within layers of regional, national, and supranational government regimes. Ostrom's (2010, p. 1) institutional analysis and development (IAD) framework provides a "general language for analysing … behaviour in diverse situations at multiple levels of analysis and concerns analyses of how rules… affect the structure of action arenas, the incentives that individual faces and the resulting outcomes". The framework, as Imperial (1999) claims, covers a broad understanding of institutions and policies, but also considers contextual factors such as biological and socio-economic issues, and recognises a variety of transaction costs, such as information, coordination and resource structure. The institutions include public policies and customary rules and practices. This section examines the IAD framework to build a framework to guide this research.

3.3.1 Components of the IAD Framework

The IAD framework comprises several inter-linked variables. Ostrom (2011) divides the IAD framework into seven variables: biophysical conditions, attributes of community, rules-in-use, action situation, interaction, outcomes and evaluative criteria (Figure 3.1). The first three elements are external influencing the other variables, as discussed below.

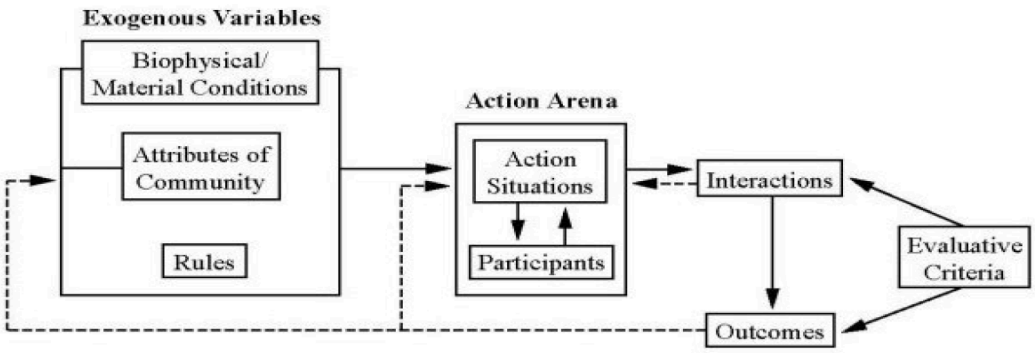

Figure 3.1: The IAD framework
Source: Ostrom (2011, p. 10)

Biophysical conditions refer to the environment, resources, and geographical characteristics influencing other attributes (Ostrom, 2005). Rules-in-use, or institutions, refers to existing norms, rules and practices, both formal and informal, that shape resource users' behaviours regarding the resources (Ostrom, 1990). Attributes of the community refer to socio-cultural features of the community such as age, livelihood activities and ethnicity.

The action situation in the IAD framework refers to the socio-cultural, political-economic and physical contexts, within which various actors/organisations with diverse goals, resources, and responsibilities interact and influence one another to solve collective action problems (McGinnis, 2011; Ostrom, 2011). McGinnis (2011, p. 172) claims that the action situation is "the black box where policy choices are made". The structure of an action situation, according to Ostrom (2005), comprises seven variables: *actors* are the participants assigned *positions* to take assigned *actions* throughout different stages of processes; *information* about the intended *outcomes* is acquired and used to *control costs and benefits* of their actions and outcomes.

Ostrom (2011) specifies seven rules-in-use which shape these variables, and the action situation can be conceptualised according to these interaction rules. Boundary rules define *participants* who occupy certain *positions* (such as fishers or coordinators) as set by position rules, with some rights and responsibilities according to choice rules. The participants exercise *control* as set in aggregation rules (e.g. their own initiatives vs. external impositions) over various decisions, as outlined in the scope rules. The decisions are made according to mechanisms set by choice rules to take certain *actions* based on certain *information* provided through information rules. The actions lead to expected *outcomes* (such as fisheries improvement or degradation), as set out in the scope rules, taking into consideration and influenced by *costs and benefits* as outlined by payoff rules (see Figure 3.2).

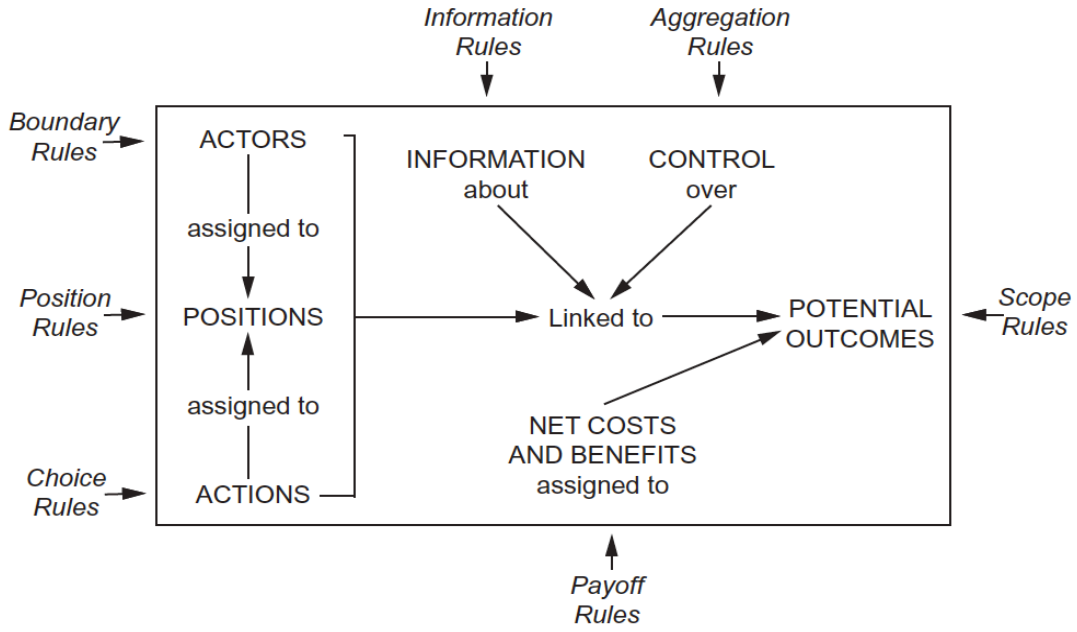

Figure 3.2: Rules influencing variables of an action situation

Source: Ostrom (2011, p. 20)

Some of these interaction rules share similarities with Ostrom's (1990) institutional design principles, by which she argues for local-level rules for managing natural resources because of their effectiveness in managing natural resources (see Figure 3.3). Payoff and cost-benefit are directly comparable because they exist in both the interaction rules and design principles (see arrows in solid print), suggesting that CFM supports an Ecosystem Approach to Fisheries Management (EAFM) involving many communities at large-scale environments. However, some other design principles, such as 'graduated sanctions' and 'conflict resolution' are missing in the interaction rules, while the others such as 'accountability' and 'nested enterprise' are not clearly defined in the interaction rules.

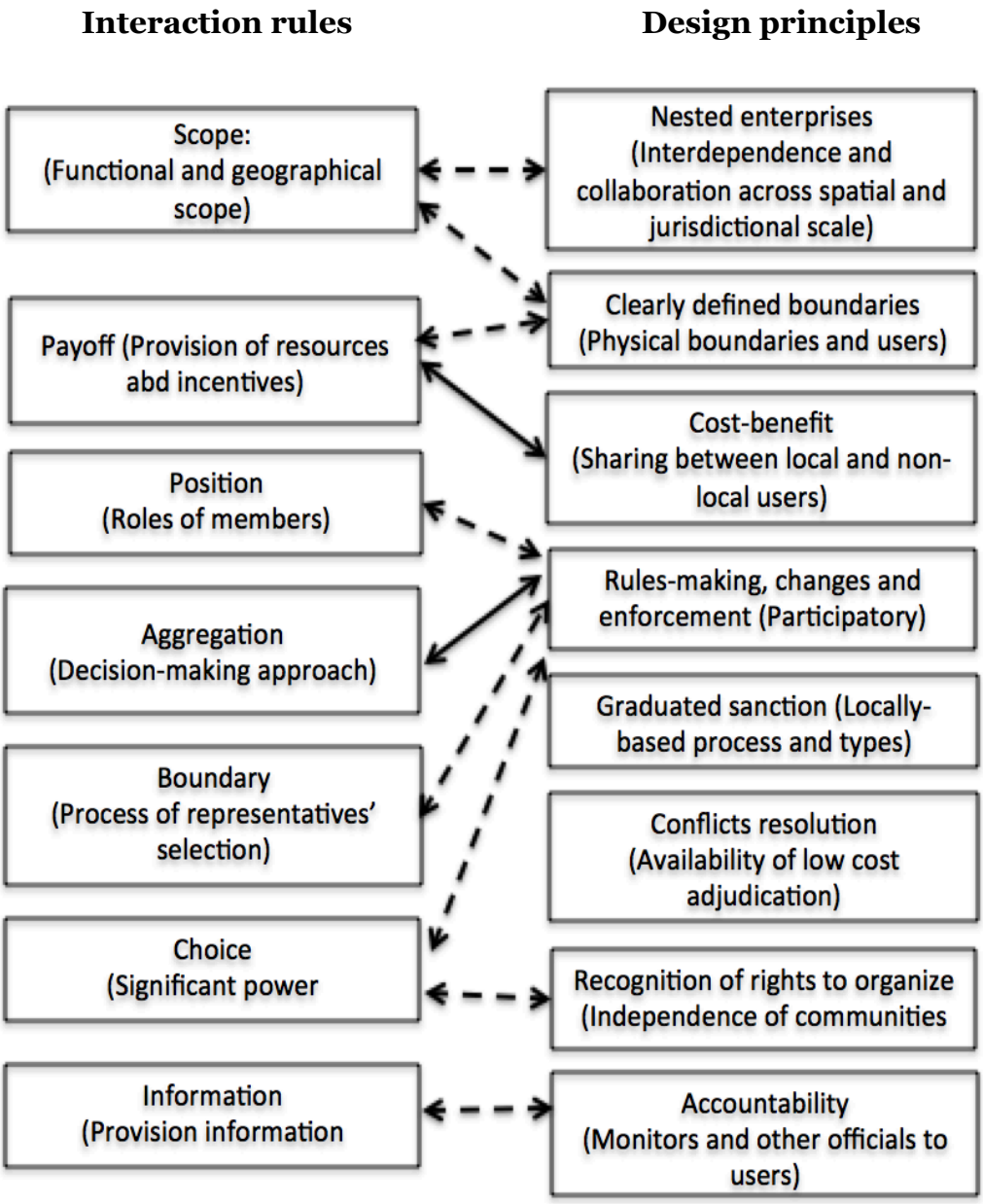

Figure 3.3:Comparing and contrasting the interaction rules with institutional design principles
.....: Indirectly comparable
_____: Directly comparable

Source: Ostrom (1990) and Ostrom (2011)

Ostrom (1990; 2011) does not specifically define and identify the patterns of institutional interaction. However, Young (2006, p. 2) defines institutional interaction as an "interplay between or among regimes located at higher and lower levels on the jurisdictional scale". The regimes can be situated across levels from the global, national, provincial, district and community levels. Young (2006) adds that the interaction can involve regimes at all levels or a few

levels and result in different patterns, such as dominance, negotiated agreement and system changes.

The patterns of institutional interactions change across temporal scales due to various factors (Young, 2006). These changes, according to Ostrom (1999a), relate to a fact that the participants are rational when they decide, but there is a limit to the information and resources available for them to decide. Therefore, changes in the patterns of interaction reflect the continuous learning process, which Young (20016, p.9) labels as cognitive transitions. Young (2006) highlights other factors such as changes in formal power distribution, dynamics of decentralisation and competing discourses of management regimes. The adoption of an ecosystem-approach to fisheries management is an example of the duelling discourse. Finally, blocking coalitions, such as an association of sub-national governments, from changing the national government management regimes also influences patterns of interaction (Young, 2006).

These interactions shape the overall outcomes, such as improvement or depletion of resources and evaluation criteria (Ostrom, 2011). There are no particular criteria for evaluating natural resource management; scholars use various criteria, such as efficiency and effectiveness, depending on the problems and goals of an evaluation. However, the IAD framework highlights transactional costs related to organisational interactions.

3.3.2 Analysis Level of the IAD Framework

The IAD framework incorporates a multi-level institutional analysis (see Figure 3.4 below), comprising constitutional, collective choice and operational levels (Ostrom, 1990 and McGinnis, 2011). In this arrangement, higher levels define the lower levels, and the latter have to give effect to the former. The constitutional level refers to governing structures and processes, including who are the participants in the decision-making body and how to change the lower levels of rules. An example of this level is a policy for designing and changing a constitution. The collective-choice level relates to implementing decisions and how to change a lower level of rules. Examples of this level include formal settings, such as legislatures, regulatory agencies and courts to devise and

implement a policy, and informal arenas such as annual gatherings and private associations. The operational level relates to daily operational rules such as types of fish that are allowed or prohibited to be caught. Examples of this level include an organisation's working level of activities or an individual's everyday life.

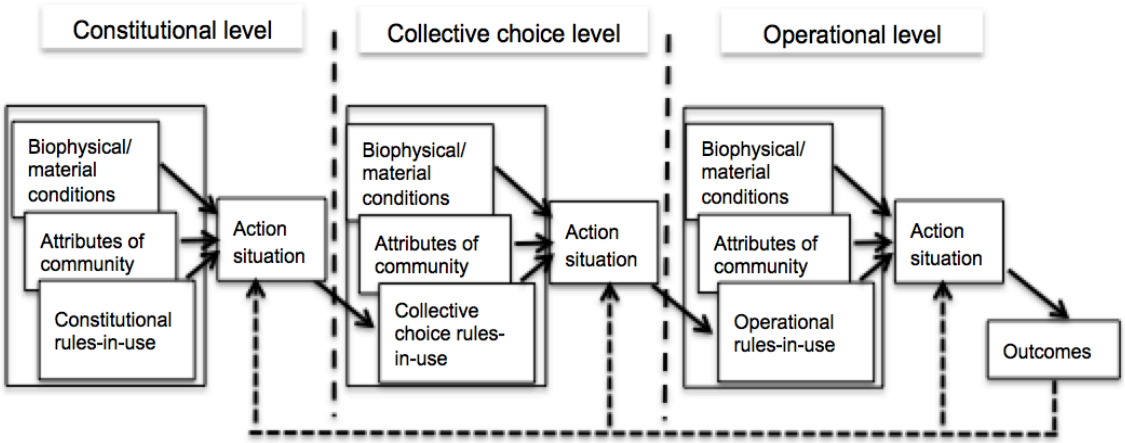

Figure 3.4: Level of institutional analysis
Source: Adapted from Ostrom (1990)

3.3.3 Uses and Criticisms of the IAD Framework

The multilevel structure of the IAD framework allows causal relationships between various socio-ecological factors and their interactions and outcomes to be identified. Ostrom (2011) adds that interdependent relationships enable better understandings of various actors and organisations with different goals and behaviours. Similarly, according to Koontz (2005), the framework enables examination and comparison of individuals' preferences and political actions across jurisdictions. However, Koontz (2005) points out that the framework excludes roles and changes in political choices and individual acts, due to factors such as learning, deliberative discourse and rational decision making, which shape an action situation over a certain period. Therefore, Clement (2009) proposes adding another two external variables: politico-economic context and discourses.

The IAD framework has been applied and tested by scholars in various empirical studies, including fisheries. Beitl (2011, p. 507) found that certain common property arrangements "can promote sustainable resource use on a local level, while also identifying certain vulnerabilities". Rudd (2004, p. 121)

studied the establishment of institutional design and monitoring for an ecosystem approach to fisheries management and confirmed that the framework is "well-suited for designing and monitoring policy experiments because of its multilevel causal linkages and flexibility". Similarly, Imperial (1999, p. 261), who used the IAD framework to investigate ecosystem-based management, argues that "the focus of the IAD framework on rules and behavioural norms is also appropriate since many ecosystem-based management programmes focus on changing rule structures and the behaviours of people". Mulazzani et al. (2013) found that the framework provides for causal interactions between fisheries, fishing activities and markets in reviewing multi-level marine governance in several European countries.

However, the IAD framework does not provide guidance to assess the conditions under which institutions operate. The framework establishes a lens to disentangle and examine the characteristics of institutions that shape actions and interactions to solve collective action problems (Ostrom, 2011). Thus, the framework does not emphasise individual efforts to learn, interact, and shape the interactions. For example, Heikkila and Andersson (2018) add:

> The IAD has not effectively diagnosed how political 'agents', or those people in operational choice situations, relate to the 'principals' they are representing (for example, often people in collective choice or constitutional choice situations).

Regarding natural resource management, the IAD framework does not specify particular institutional arrangements to enable the application of local people's voices. The use of the framework to examine how CFM is applied in large-scale marine environments appears not to have been studied. Most studies on the application of CFM in fisheries management focus on small-scale marine environments. In addition, as Clement (2009) suggests, there has been no study using the IAD framework to identify institutional interactions and institutional changes of fisheries management within large-scale marine management, particularly in developing countries.

3.4 Case Selection

Yin (2009, p. 18) argues that a case includes anything that represents a "contemporary phenomenon in depth and within its real-life context". In Runeson and Host's (2008, p. 140) opinion, a case should have clear boundaries such as "typical, critical, revelatory or unique in some respect". These characteristics facilitate researchers in selecting, classifying, comparing and contrasting cases (Flyvbjerg, 2006). Other guidelines to select cases include variation in the information of the cases, accessibility in both spatial and temporal scales and availability of information in the case (Flyvbjerg, 2006; Silverman, 2004).

The Sawu Sea Marine Protected Area (MPA) in Nusa Tenggara Timur province (see Figure 3.5), the empirical focus for this study of how the Indonesian government applies CFM as practised by fishers on Rote Island, was established in 2014 in response to the establishment of the Coral Triangle Initiative (CTI) in 2009. The case is contemporary with clear spatial and temporal boundaries. The CTI is the largest and the first MEA involving developing countries in the Indo-West Pacific region, where local communities have practised CFM for generations.

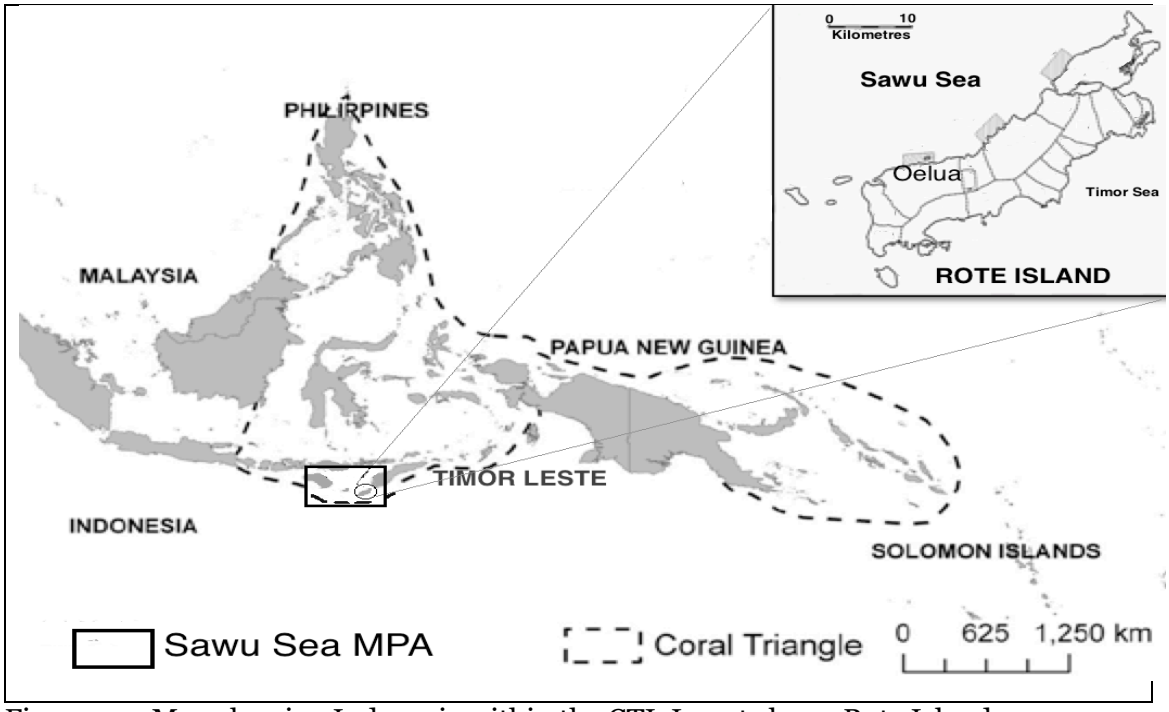

Figure 3.5: Map showing Indonesia within the CTI. Insert shows Rote Island
Source: Von Heland et al. (2014, p. 54).

Besides establishing MPAs, the CTI aims to adopt an ecosystem approach to fisheries management. This approach shifts fisheries management from jurisdictional-based to ecosystem-based arrangements at regional and national levels (Pomeroy et al. 2015). This goal challenges the structure of fisheries management that the national government had decentralised to the district government in 1999 and to CFM on Rote Island.

Rote Island fishers and Rote Ndao sub-national government had never initiated or managed large-scale MPAs before. The national government has restricted fishing methods and protected endangered species, but there is no limit in accessing marine areas in Rote Island. Most fishing activities of local fishers are at a small scale, but increased support for customary fishers at both the provincial and district level since the 2000s has improved their livelihoods and increased the importance of fisheries and marine resources. Thus, how the Indonesian government applies CFM in the Sawu Sea MPA influences the livelihoods of small-scale fishers as well as influencing the roles of both the provincial and district governments' in addressing the impacts of the Sawu Sea MPA on the customary fishers.

Oelua village (see Figure 3.5) on Rote Island is one of six villages where the national government re-established *hohorok*. The village is one of the main fishing communities on Rote Island with unique practices of CFM practices arising from the heterogeneity of customary fishers, both indigenous and non-indigenous. As of 2017, up to a quarter of fishers living in Oelua were non-indigenous fishers who had lived there for a long time and had strong inherited marine-based knowledge upon which they relied on for their livelihoods (Bureau of Statistics, 2018e; Carnegie, 2008).

In addition, fishing communities in Oelua and on Rote Island had experienced various marine environmental problems, such as depleted resources from cross-boundary pollution and illegal fishing practices by both local and outside fishers (Amnifu, 2016; Fox & Sen, 2002; Prihandono & Dewanty, 2015). These facts influence not only the need to establish MPAs but also pose challenges for applying CFM in the village.

The selection of the case is also influenced by my previous work. I was an official at the Development Planning Agency of Rote Ndao district between 2009 and 2014 when the national government undertook the preparation for establishing the Sawu Sea Marine Protected Area (MPA). The agency is responsible for, among other things, reviewing budget proposals from line departments. I oversaw several departments, including the Fisheries and Marine Affairs Department, through which I learned that Rote Island fishers had complained about increased illegal fishing activities by outside fishers around the island. As a response, I had supported the Fisheries and Marine Affairs Department collaboration with law enforcers to patrol the areas and act against illegal fishers. However, due to a lack of resources, it was difficult to prevent illegal fishers. Thus, when the department became involved in the establishment of the Sawu Sea MPA, I recognised the national government's efforts to strengthen law enforcement through the MPA.

3.5 IAD Framework for CFM Applicability

This study uses the IAD framework to analyse the applicability of CFM in large-scale marine management. However, it does not use all components of the IAD framework and it focuses on the operational level because as Ostrom (2005) points out, a comprehensive analysis of all components would be a formidable challenge. Rather, the focus of this study is on the interaction rules (Table 3.1) because these rules influence institutional interaction and CFM applicability. This study does not examine outcomes of fisheries management interaction. Therefore, engaging with critiques of the IAD framework, such as its elements as raised by Clement (2009) and Koontz (2005), is not a focus of this study.

Table 3.1: Rules, indicators and criteria for assessing CFM's interaction with other regimes in managing large-scale marine resources

Interaction rules	**Indicators**	**Criteria**	**Examples**
Position	Roles of representatives	Representatives and customary fishers play significant roles	Coordinator, secretary and member
Boundary	Selection of representatives	A legitimated and democratic process/mechanism	Appointment, election, etc.
Choice	Power	Management bodies possess significant power to make decisions and take actions. *Customary fishers have autonomy to manage marine areas.* *Rule-making, change and modification involve customary fishers* *The government at all tiers should not undermine local authority and communities*	Power to recruit staff members and to seek funding
Aggregation	Decision-making approach	Consensus emphasises agreements and considers customary rules and practices considered.	Command, negotiation of consensus, etc.
Information	Provision of information	Accessible and updated information for customary fishers *Participatory provision of information about the officials' performance*	Provision of accessible reports, bulletins, etc. to and by fishers
Payoff	Provision of resources and incentives	Provision of sufficient resources to support the management bodies in pursuing their goals. *Proportional equivalence between benefits and costs.*	Availability of budget for management bodies
Scope	Functional scope	Power to manage inter-dependent socio-ecological aspects. *Customary fishers have representatives across government tiers to influence decision-making;* *High-level management bodies strengthen the capacity of the community to deal with external problems.*	Board members made up of various departments and organisations
	Geographical scope	Geographical-based power across tiers of government. *Rules suitable to local ecological conditions and clearly identified individuals or households to access resources*	Management bodies have authority across inter-related jurisdictions

Source: Adapted from Ostrom and Crawford (2005) and Ostrom (1990)

Together with Ostrom's (1990) institutional design principles, various concepts related to participatory and collaborative natural resource management will guide the analysis of how CFM is applied. The concepts include common pool resources (Berkes 2005, 2006), a property rights-based resource management (Bromley, 1987; Aswani, 2006; Soliman, 2014), accountability and representation (Ribot, 2002), collaborative management (Berkes, 2006, 2010; Eppel, 2013) and collective action (Marshall, 1998), an ecosystem approach to fisheries management (Pomeroy et al., 2015), rights-based fisheries management (Scott, 1999) , institutional misfits (Berkes, 2006), institutional interaction (Young, 2002b), scalar complexity and linkages (Berkes, 2006; Lemos & Agrawal, 2006) and transactional costs (Imperial, 1999).

3.6 Data Collection Methods

Through public documents, semi-structured interviews, and media news, data relating to the interaction rules of the IAD framework were obtained about how CFM is recognised and applied by the Indonesian government. Emphasising a plurality of sources of information, known as triangulation, provides comprehensive data, helps in finding gaps and overlaps, reduces information biases and increases the validity of the study (Miles et al., 2014). Each of these methods is discussed below.

3.6.1 Public Documents

Public documents include laws, policies, plans and reports published by organisations relating to the CTI and Sawu Sea MPA such as the national, provincial and district governments, international and local NGOs, local communities, universities and research institutions (Table 3.2). These various sources of documents provided rich information about fisheries management.

These documents were relatively readily accessible. Most government documents are available on the Internet. Some documents produced by the provincial and district governments, and local communities are not accessible online, but they are available on request. However, I had personal access to

many of these documents before undertaking fieldwork. Almost all newspaper articles are available on the Internet.

The variety in the documents also enabled me to identify differences, overlaps, and gaps among laws and regulations across sectors and jurisdictions. This provided a better understanding of the institutional factors that shape fisheries management. Document analysis provided information on compatibility and incompatibility between formal and informal regulation and practices, which explain the applicability of CFM in the CTI. I identified their contents about CFM, their objectives and strategies, processes of development and the roles of local people and sources of funds. This strategy helped me to understand the contexts that shaped these documents.

Table 3.2: Source of documents

Level	Documents	Purposes
National	• National laws and policies, and evaluation reports • Policies and reports on the Sawu Sea MPA • Reports on its advocating activities • National newspapers	To identify recent institutional changes and challenges to fisheries management relating to efforts to support the CTI and customary fishers
Provincial	• Planning documents and reports on the Sawu Sea MPA • Advocating policies, plans and reports • Provincial newspapers	To review institutional changes and challenges to fisheries management relating to efforts to establish the Sawu Sea MPA and support for customary fishers
District	• Panning documents and reports on the Sawu Sea MPA • Advocating policies, plans and reports	To analyse the district government's efforts to support the management of the Sawu Sea MPA and to support customary communities in fisheries management
Community	• Development planning and regulations • *Hohorok* rules	To examine *hohorok* practices prior the establishment of the Sawu Sea MPA and challenges to the applicability of *hohorok*

3.6.2 Media Reports

Data about how CFM is applied according to the interaction rules of the IAD framework were made available by the media that reported comments and

opinions of officials and covered events to CFM. The media include both national and local printed and online daily newspapers and monthly magazines. The news media at the national level include Kompas, the *Jakarta Post* and Tempo, and at the provincial level include *Pos Kupang* and *Timor Express*. These different levels of news media provided a wide range of topics that complemented one another.

Data from newspapers enrich information about CFM because they provide everyday and updated stories such as events, involving organisations and officials based on both the reporters' views and direct quotes from the officials. In most cases, several newspapers covered the same topic, which enriched knowledge about the topic and enabled me to compare and contrast the information across newspapers. I also sought information from public documents to support information provided by the newspapers. This helped me to avoid bias that might occur from relying only on particular newspapers.

3.6.3 Semi-Structured Interviews

During a field trip to Indonesia in mid-2017, I undertook twenty-five interviews with key decision-makers, researchers, professionals and customary figures and fishers at all tiers of government, and with independent researchers (see Appendix 1). I visited Jakarta, the capital city of Indonesia, to interview government officials at the national level, NGO officials who had been involved in the establishment of the CTI and independent researchers who have interests in legislation and have done studies related to CFM. I also visited Kupang, the capital city of NTT province, to interview government and NGO officials, particularly members of the Provincial Conservation Forum. On Rote Island, I interviewed members of the District Conservation Forum, customary figures and fishers in Oelua, Lalukoen, and Oetefu Villages and on Ndao Island. I did the main interviews in Indonesia, while I undertook additional interviews using electronic mail, social media (especially Facebook) and phone calls after I returned to New Zealand.

The goal of the interviews was to seek information that was not available through documents, and to confirm information across sources. The selection of

participants was based on the following criteria: knowledge of CFM; involvement in the development of the CTI and Sawu Sea MPA; roles and interests in the development of the CTI and Sawu Sea MPA. While most of the interviewee selection was based on my knowledge of key stakeholders in fisheries management across government tiers and in the community, some interviewees were chosen based on information from previous interviewees or based on snowball sampling.

The number of interviews reflected the need to ensure comprehensive coverage of the case by providing a broad range of insights about customary fisheries management practices both in freshwater and marine environments. Therefore, data collection was undertaken across government tiers involving government officials, NGO workers, independent researchers, customary leaders and fishers. At the community level, data collection was undertaken in four villages, instead of one as I initially planned, where *hohorok* was revived and reapplied. When data 'saturation' was reached no further interviews were undertaken.

The interview questions focused on gathering data on participants' roles, knowledge and views in relation to fisheries management at different tiers of government, about CFM on Rote Island and in the Sawu Sea MPA. The questions were developed using the IAD framework outlined in Chapter 3 (see Appendix 2 for a copy of the interview schedule.) The interviews enabled me to obtain opinions, experiences and knowledge not available in official documents, and which are only available to a limited degree in media reports. I focused on seeking additional information and confirming information provided by previous sources. This strategy helped me to undertake triangulation without wasting my time and failing to collect necessary data.

There were several challenges I encountered during data collection. Before undertaking the fieldwork, I identified potential participants in government organisations, non-government organisations, customary figures, and customary fishers. The fieldwork involved all the targeted participants. However, while I interviewed all of them, some of them only allowed a limited time for interviews. Some participants from key provincial and district governments, who were involved in the early stages of the establishment of the

Sawu Sea MPA, had assumed different jobs before the interviews. These officials were not available for interviews because they felt they had not been in their positions for sufficient time to understand the topic.

Following the interviews, I transcribed the recordings both in Bahasa Indonesian and Rote, and then I translated them into English. This choice of language enabled me to protect the ideas and arguments in their original language and facilitate comparison with the report in English. The translation into Bahasa Indonesian helped me to recall certain expressions and intentions of the participants in the language I used during the interviews. I did not find much difficulty in translating the transcriptions. Therefore, the risk of reduced or changed meanings of data from the translation was minimal, particularly after two participants, who speak English, were available to review the translation of transcripts I made from Bahasa Indonesia into English

3.6.4 Fieldwork Reflexivity

Reflexivity was undertaken in relation to the interviews I undertook because my cultural identity and working experience influenced my communication approach, knowledge and views of local contexts. As a Rotenese who shares many cultural attributes with other Timorese, I did not see myself as an outsider to local contexts. I speak local languages and understand local culture. I had worked in the provincial and district government between 1996-2009, and so was familiar with the sub-national government contexts. I gleaned information about the CTI, the Sawu Sea MPA and the involved organisations and officials through the media and research-based websites.

Established knowledge of local contexts helped me to secure contacts with some participants at the national and provincial levels prior to undertaking fieldwork. At the district and community levels, I benefited from my personal knowledge as a Rotenese about CFM practices, from my professional work on Rote between 2009 and 2014, and from my involvement in research on fisheries and poverty in 2013. I established relationships with some interviewees through various media such as social media before and during this fieldwork.

In practice, I found that my personal networks worked not only more efficiently than a formal procedure but also increased my confidence in getting access to the participants and building trust, so they shared information with me. However, the flexibility I applied in approaching interviewees was another key to the access. In two interviews, I had to travel with participants in their cars so that I could interview them as they journeyed to work, meaning that being an insider did not make data collection easy; they did not allocate particular time for my interview because my position did not influence them.

I adjusted the interviews according to the preferences of the participants. In most interviews, I met the participants at a place of their choice. All interviewees welcomed and allowed me to interview them. However, I found that interviews in places other than workplaces were more relaxing. The interviewees did not highlight a time limit for the interviews. I learned that interviews in Rote language enabled interviewees to articulate their thoughts without difficulty. The atmosphere of interviews with government officials at workplaces was formal, often disturbed by additional activities and limited to a particular time.

I made a change in this study related to case selection at the community level. I found out from initial interviews that CFM on Rote Island, which the national government re-applied for managing fisheries in Oelua and several other villages, has its root in both terrestrial and marine-based fisheries management but the fishers in Oelua village had never implemented CFM in marine fisheries in the village. CFM was practised in other coastal villages, such as Oetefu village and Ndao Island, and in lakes such as the Tua Lake in Lalukoen village (see Chapter 5). Therefore, this study collected data in three villages on Rote Island and from Ndao Island, instead of in Oelua village as I initially planned.

3.7 Data Analysis

I undertook data analysis to build an institutional framework to show how CFM has been practised on Rote and how the national government applied CFM into the management of the Sawu Sea MPA. Thus, as O'Leary (2014) has identified,

my data analysis involved several stages, which started from real or particular data and progressed to generalisation or abstraction. The stages were: 1) collection of raw data; 2) organising, reducing and coding data; 3) interconnecting data; 4) building themes; and 5) building and verifying theories (see Figure 3.6).

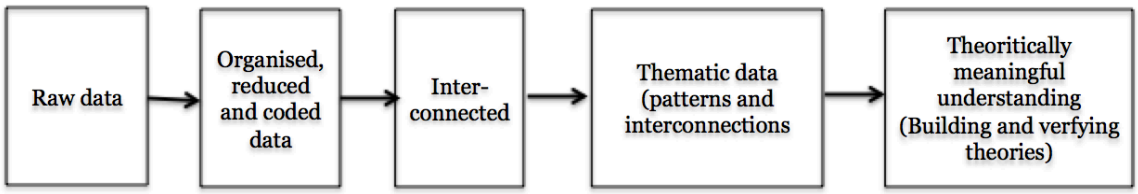

Figure 3.6: Data analysis process
Source: Adapted from O'Leary (2014)

In this procedure of data analysis, I did intensive and repeat activities of listening to the recordings, reading the transcripts, and reordering and classifying data according to emerged themes. I used a Microsoft Excel spreadsheet to classify and reorder data and categorise transcripts according to organisations, documents and interviewees across government tiers. The analysis I undertook involved institutional analysis and stakeholder analysis.

Following Ostrom (2011), I undertook institutional analysis by examining the process and products of policies, such as laws, regulation, plans and reports across government tiers and by identifying local rules and practices at the community level to understand how the national government applies CFM. The aim is to understand the process of their development and their interconnection. For example, while national laws serve as a regulatory framework, most local laws and regulations serve as operational ones. National laws specify the roles and responsibilities, interaction of government organisations and involvement of the people in the development of operational regulations. However, lower-level regulations often fail to give effect to higher-level ones or the government delays enacting operational regulations in order to implement high-level laws.

In undertaking a stakeholder analysis, I identified stakeholders across government tiers and non-government organisations, independent researchers,

and members of local communities. This analysis enabled me to understand their roles and involvement, expectations and experience, and opinions in the development and implementation of related laws and regulations. The involvement of key stakeholders in the development of policy, their perspectives about its implementation and the benefits they view or enjoy influenced the legitimacy of institutions (Haus, Heinelt, & Stewart, 2004; Scharpf, 2003).

3.8 Research Ethics

This section describes, firstly, my positionality in relation to this research; and, secondly, the key ethical considerations and the institutional ethical procedures that were followed and finally the steps taken to ensure data collection adhered to ethical standards.

3.8.1 Ethical considerations and procedures

The key ethical considerations for this study include freedom from harm, voluntary participation, informed consent, cultural sensitivity and avoidance of conflict of roles. The Massey University Human Ethics Committee screening questionnaire was applied to the proposed methods and this indicated that the research was low risk. Subsequently, a low risk notification was submitted to the university's Ethics Office.

To ensure informed consent, participants were provided with an information sheet, which explained the nature of the research and the research procedures (See Appendix 4 for a copy of the invitation letter sent to prospective interviewees and Appendix 5 for a copy of the Information sheet). It was emphasised that participation was voluntary, and the participants were free to withdraw from the research at any time. Participants were sent a copy of the interview guide (see Appendix 7) and asked to sign a consent form (see Appendix 6) if they would take part.

Freedom from harm included, where appropriate, ensuring that participants were able to request that their identity was kept confidential. I identified participants from government organisations according to the name of their

posts to help me, among other things, in identifying tensions among different organisations. Fisheries officials at both the provincial and district governments, for example, tended to refer to one another when I asked questions about which government tiers should responsible for empowering customary fishers after the national government recentralised fisheries management.

3.8.2 Positionality

My previous employment with the Development Planning Agency (2009-2012) and the Consent Agency (2012-2014) of the Rote Ndao government influenced this study. In the former, my responsibilities included drafting planning documents, reviewing budget proposals, and undertaking monitoring and evaluation of development programmes. In the latter, I dealt particularly with managing consents for activities such as construction, issuing permits for businesses such as restaurants and workshops, and producing warrants of fitness for public transport.

These roles provided me with a comprehensive understanding of laws and policies across sectors and tiers of government. However, I was not directly involved in implementing programmes related to customary fisheries management and empowerment of fishers by line departments such as Department of Marine Affairs and Fisheries. Therefore, to some extent, I have the knowledge of an insider but also felt as though I was an outsider regarding this study. These dual roles reflect the observation of Scheyvens et al. (2014, p. 185) that often researchers as "'insider' and 'outsider' are more accurately understood as existing on a sliding scale or continuum, rather than being seen as binary opposites".

As an insider. I have a good knowledge of local language and culture and some knowledge of customary rules for natural resource management. This assisted me in connecting and communicating with participants. I did not have difficulty gaining access to participants and understanding the contexts that shape the participants' worldviews.

However, an 'insider' position can also be a source of bias and subjectivity that affects the research process. Following Herod's (1999) advice on how to minimise bias and to be aware of the influence of subjectivity, I positioned myself along the insider and outsider continuum in different contexts, and I managed to represent the position I chose to play in a fluid way. In communicating with the provincial and district government officials, for example, I positioned myself as a former official as they knew my previous positions but I emphasised that I was conducting research on a topic about which I did not have direct, in-depth knowledge.

Rose (1997) notes that the similarities in identity can strengthen trust. In communicating with customary figures and fishers, I positioned myself as an outsider and informed them of my position as a student to avoid potential problems related to power relations due to my previous professional roles in government. As an insider, I had some basic information about *hohorok* and Bajo fishers because of my upbringing prior to data collection. However, I had no updated and comprehensive knowledge about *hohorok* nor had I encountered the fishers directly. Therefore, during data collection and analysis, I continued to undertake reflection about my position in order to avoid imposing my worldviews on the interviews. I also relied on triangulation to avoid biases. This multifaceted 'self' is a common practice (Bailey, 2007, pp. 6-7) and researchers (see, for example Scheyvens, Scheyvens, & Murray, 2014, p. 187) do not view this strategy as a deception.

Mullings (1999, p. 340) notes "to acquire information that faithfully represents the real world, researchers must often seek, what [is referred] to as positional spaces, that is, areas where the situated knowledge of both parties in the interview encounter, engender a level of trust and co-operation". The use of appropriate language, according to Rose (1997), facilitates building rapport and the articulation of information. When I interviewed customary figures and fishers, I used Rote language, as I am a fluent speaker of it. I used Bahasa Indonesia (Indonesian language) when I interviewed government officials. Also, when interviewing government officials, I met interviewees in places other than the interviewees' work places as this gave us more freedom to exchange information than would have been possible in the interviewee's workplace. The

use of local language and the chosen places for interviews other than work places allowed more open and trusting communication.

3.9 Summary

A qualitative case study was used to generate in-depth information about how CFM is being applied by the Indonesian government in managing the Sawu Sea MPA. Using the IAD framework (Figure 3.7), the following chapters of this thesis will firstly provide background on the contexts of Indonesian fisheries (Chapter 4) and describe Indonesian fisheries management at all government tiers (Chapter 5). Chapter 6 will cover CFM practices on Rote Island before Chapter 7 presents the applicability of CFM within large-scale marine management regimes on Rote Island.

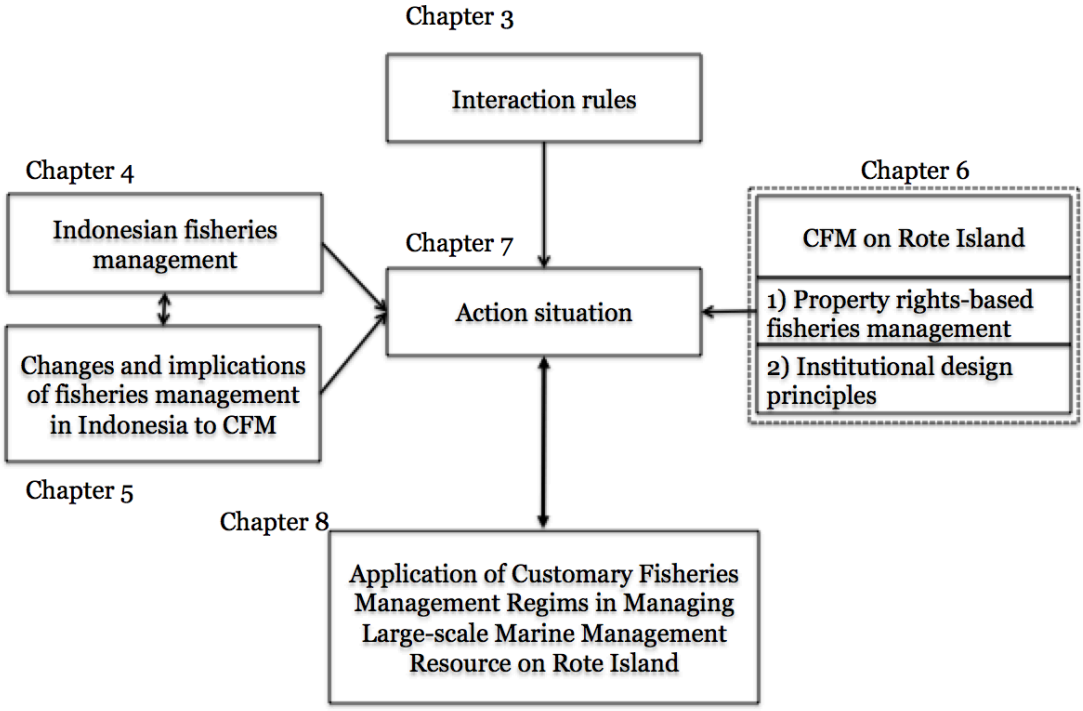

Figure 3.7: Conceptual framework for examining CFM's applicability.
Source: Adapted from Ostrom (2011)

Chapter 4 Indonesian Fisheries Management

4.1 Introduction

This chapter describes the context of fisheries management at the national level in Indonesia and at the provincial level in Nusa Tenggara Timur (NTT) province. It presents the geography and marine ecology, socio-economic characteristics, political arrangements, customary communities and their rights, and the development of marine conservation in Indonesia, all of which have shaped fisheries management from the mid-20th century.

4.2 Geography and Marine Ecology

Indonesia is the largest archipelagic country in the world with over seventeen thousand islands. Its marine area is twice the size of its landmass, with both combined covering over 773 million ha[2]. The coastline of these islands is over 100,000 km in length, making it a country with one of the longest coastlines in the world.

Its large geographical size makes Indonesia rich in fisheries and marine resources. It has over 92% of the 550 million ha of the coral reef in the Coral Triangle region (TNC, 2011), over three quarters of the world's reef coral species and 37% of all reef fish species (World Resource Institute [WRI], 2012). About 90% of these reef fish species are common to other countries in the region. Up to 13 species of sea grasses are found in Indonesia covering three million ha[2], and there are at least 41 species of mangroves covering 3.2 million ha[2] (ADB, 2014) .

The World Resource Institute (2012) notes that fisheries depletion has been on the rise across the country since the 1990s. Destructive fishing, as well as overfishing generally, is the main threat resulting in a significant loss of fisheries stock and harm to the marine ecosystem. The losses amount to as much as US$2.6 billion over a 20-year period and up to 80% (3.1 million ha[2]) of coral reefs in Indonesia are under threat (WRI, 2012). Habitat destruction and

fisheries depletion are serious problems for marine systems in Indonesia due to illegal fishing (explosives, poisons and trawlers), unregulated and unreported (IUU) fishing.

The Sawu Sea in NTT province, which is within the Lesser Sunda eco-region[4], is the third most important eco-region in Indonesia due to its size and biodiversity (TNC, 2011). The Sawu Sea, at over five million ha[2], is nearly four times that of the landmass in the NTT province (Government of NTT, 2014) . It is rich in marine biodiversity, providing habitat for sea mammals migrating between Australia and Indonesia (Treml, Fidelman, Kininmonth, Ekstrom, & Bodin, 2015). However, over 60% of the coral reef ecosystem in NTT has been severely disturbed by illegal fishing practices such as blast fishing and trawling (MMAF, 2014a).

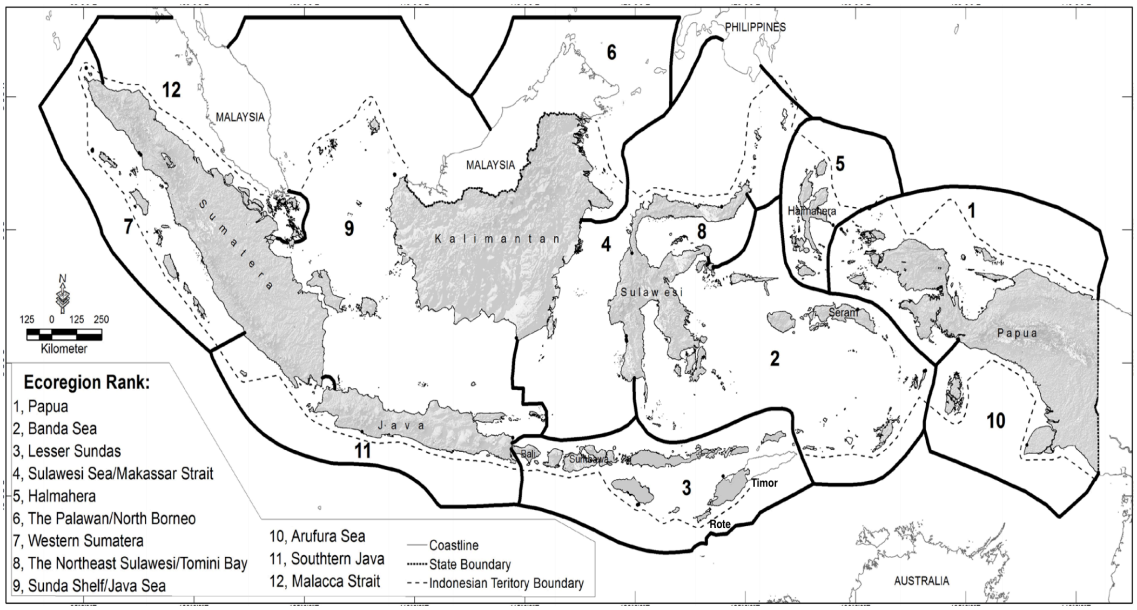

Figure 4.1 Map showing Indonesia's marine eco-regions and their ranking for marine biodiversity conservation. Sawu Sea and Rote Island are in Eco-region 3

Source: Susanto, Suraji and Tokeshi (2015)

4.3 Socio-Economic Characteristics

Indonesia has a large population with considerable ethnic diversity. Indonesia's population was over 260 million people in 2018, with around 2% annual growth

[4] Green and Mous (2008, p. vii) define eco-regions as "large areas containing geographically distinct assemblages of species, natural communities, and environmental conditions".

and over 714 ethnic groups (President of Indonesia, 2018). More than 70% of the population lives in the western part of the country, particularly in Java and Sumatera Islands. Javanese ethnicity in central and eastern Java is the largest single group, with over 40% of Indonesia's population, and the Sundanese ethnicity in western part of Java make up to 15% of the population. Over 70% of Indonesia's landmass is in the eastern part of the country (Bureau of Statistics, 2018f). Thus, population density is higher in the western part of the country than in the eastern part.

The concentration of population in the western part of the country influences economic activity. Up to 50% of annual economic investment, particularly by foreign investors, is focused in the western part (Indonesia Investment Coordinating Board, 2017). The economy is currently growing at over 5% per year. Over 70% of its annual US$1,000 billion gross domestic product (GDP) is generated by economic activities in Java and Sumatera islands. Agriculture-based economic activity, including fisheries, contributes up to 15% of annual GDP (President of Indonesia, 2018).

Despite increased fisheries production, the number of fishing households has halved during the last ten years from 1.6 million in 2008 to below 0.8 million in 2018 (Dinillah, 2018). That the number of fishers has decreased despite increased fish consumption and production shows improved harvesting methods. For example, motorised fishing fleets increased from almost 350,000 vessels in 2007 to near 400,000 in 2009, an increase of 2% annually (Bene et al., 2010; FAO, 2014).

Nusa Tenggara Timur province is one of a few provinces in Eastern Indonesia with a relatively small population. Its population in 2017 was over 5 million people, growing at 1.6% annually. It has well over 500 islands, of which Flores, Sumba and Timor are the most populated (Bureau of Statistics, 2018b). Despite having a relatively small population, NTT is ethnically diverse with over 70 ethnic groups with different linguistic backgrounds and cultural practices, including diverse customary fisheries management (MMAF, 2014a).

The livelihoods of most people in NTT (over 20%, or 1.5 million) are associated with dry-land agriculture and livestock farming such as cows, buffalos, horses and sheep. The scale of livestock farming is mostly small, serving socio-cultural purposes besides an economic purpose. NTT province has been known nationally since the 1970s as one of Indonesia's main suppliers of cattle and meat with a significant export of livestock to other parts of the country (Government of NTT, 2005).

However, NTT's economy (as measured by GDP) is small compared to other provinces, which explains why NTT is classified as the third poorest province in Indonesia (Bureau of Statistics, 2018b). Government spending at all tiers is the main driver of formal economic activity before private investment. However, over 90% of the more than US$3 billion budget of sub-national government in NTT comes from transfers from the national government (Bureau of Statistics, 2018f). NTT's GDP in 2017 was just over US$11 billion, growing at 6% annually, with agriculture (including fisheries) contributing less than 30%. Annual income per capita is just over $US700. Twenty per cent of the population have incomes below the poverty line, earning less than US$23 per month (Bureau of Statistics, 2018f).

The growing population and economy have impacts on the fisheries sector at the national level. Fish consumption increased from almost 40 kg/person in 2013 to over 46kg/person in 2017. Fish was the source of 50% of protein in 2012 (Food and Agriculture Organisation [FAO], 2014). Indonesian fisheries production has seen a significant increase over the last two decades, and Indonesia is now the second largest fish producer in the world after China (FAO, 2014). In 2012, fisheries production was nearly nine million tonnes (FAO, 2014), about 22% of the value of global fisheries with a value of over $1.5 billion per year (WRI, 2012). Tuna production, for example, comprised 16% of the world production of over 185,000 tonnes in 2014. This growth is significant given that in other developing countries fisheries production is declining. The growth in fisheries production results from the national government's actions to address illegal fishing (Setyadi, 2015; MMAF, 2018). Seaweed production in 2012, yielded 6.5 million tonnes, compared with nearly one million tonnes in 2005 (FAO, 2014),

as a result Indonesia now accounts for over a quarter of global seaweed production.

The fisheries and marine sector was not a major source of income for most of the population prior to the 2000s (Government of NTT, 2014) . Local communities collected mainly marine resources such as seaweed during low tides for their diet but were not heavily involved in fishing. Less than 1% were involved in fishing for commercial purposes in 1984 (Bureau of Statistics, 2016). The Kupang City Government (2013, p. 67), for example, acknowledged that "there was a lack of awareness of marine-based culture and livelihoods". Furthermore, the East Sumba Mayor stated in *Kompas*, a national newspaper, that fisheries' activities had been monopolised by outside fishers (Kewa Ama, 2008).

However, from the mid-1980s, more people became involved in fisheries, and by 2002 the percentage had increased to 5% (Government of NTT, 2002, p. 5). Since the 2000s, the provincial government introduced a movement called *Gemala*[5] to encourage local people to harvest fisheries and marine resources. The provincial government provided subsidies and training for local people who were interested in the movement. All the district governments in NTT have replicated the movement. The number of fishing households in 2015 was over 3% of 1 million households in NTT but over half of them were small-scale fishers (Bureau of Statistics, 2018b).

Some communities in NTT have traditionally had a strong marine culture, such as the Lamalera fishers in the eastern part of the province. These fishers have been well known for their whale hunting tradition using small traditional boats and wooden sticks (The Nature Conservancy, 2011). This fishing practice has been the focus of much research by international NGOs who are concerned about the threats to migratory whales in Indonesia. However, the fishers undertake this practice only to meet their dietary needs and for other cultural purposes and not for commercial purposes (Profauna Indonesia, 2005).

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[5] Gemala (Gerakan Masuk Laut) was introduced by Governor NTT in 2001 in Decree 24/2002

In addition to indigenous fishers, outside migratory fishers, mainly Bajo fishers have increasingly fished in NTT. They had fished across the Timor sea for a long time during the Dutch colonial period (Nolde, 2009; Stacey, 2007). Bajo fishers are from an ethnic group that inhabits other parts of eastern Indonesia and parts of Malaysia and the Philippines (Bria, 2014; Nolan & Vincent, 2010). They are well known for their migratory marine culture, enabling them to fish across boundaries. Bajo fishers travelled to the NTT province to collect trepan and catch sharks in the southern marine waters off Rote and northern Australia (Jaiteh, Loneragan, & Warren, 2017; Nolde, 2009).

However, Bajo fishers have also contributed to increased fisheries depletion due to illegal fishing practices (Pet-Soede & Erdmann, 1998). In an international seminar about Bajo fishers, Suyuti (quoted in Radja, 2013, p. 1) states that almost all Bajo fishers in Indonesia use destructive fishing methods, particularly coral reef blast fishing. Their fishing has destroyed over half of coral reefs in NTT (MMAF, 2014a). Bajo fishers adopted this fishery practice during their migratory fishing activities across marine areas in NTT, Rote Island and as far as Australia's northern waters (Stacey, 2007). The Australian Government has imprisoned many of these fishers for various reasons related to illegal fishing (MMAF, 2014a).

During the last two decades, the involvement of local people in NTT in marine-based livelihoods has increased significantly. The number of indigenous fishers quadrupled from 1% in 1984 to 4% in 2012 (Bureau of Statistics, 2016). Seaweed production in 2014 increased sharply from approximately 40 tonnes to nearly 4,000 tonnes in 2002, still within sustainable limit. The fisheries sector's contribution to regional domestic products increased from over 3% in 1999 to nearly 5% in 2015 (Bureau of Statistics, 2003, 2015, 2016). While most seaweed farmers are indigenous people, Bajo fishers focus on capture fishing. There are no reports of conflicts between Bajo fishers and local fishers because of competition over depleted fisheries, although conflict with Bajo fishers has occurred elsewhere in Indonesia (Supreme Court, 1978, 1988). This lack of conflict is because of the way in which Bajo fishers have become integrated with indigenous local communities.

Newly released data from the provincial government shows that the fisheries harvests in NTT, including Rote Island, are below target, just over 35% of existing potential (Lewanmeru, 2018). The increased number of fishers has not led to a significant increase in the fisheries harvest because most fishers are artisanal. This claim, however, does not reflect the state of fisheries and marine resources in NTT because over half of the coral reef, sea grass and mangrove areas are severely threatened by illegal fishing by commercial trawlers from outside Rote, NTT and Indonesia (MMAF, 2014a).

4.4 Political Arrangements

Changes to national level political regime have had considerable influence on Indonesian fisheries policy, affecting Rote arrangements over the last few decades, which shifts in the exercise of power and the roles of customary communities in shaping natural resource management. The power of the national and sub-national governments, the roles of customary communities (village governance) and how power has been exercised have changed since independence.

4.4.1 The national tier of government

The Indonesian Constitution, adopted after Indonesia gained independence in 1945, and therefore referred to as the 1945 Constitution, establishes Indonesia as a unitary state (Ellis, 2002). In this political system, the ultimate power is concentrated in the national government. While the Constitution outlines the general role of sub-national government, national laws and regulations outline the roles of communities, which are a sub-local tier of government (albeit not addressed in the Constitution) (Ellis, 2002).

Following the *Trias Politica* model for a division of power, the Constitution states that there are three branches of power in Indonesia (Lev, 1978). First, the national government exercises executive power. The government also exercises legislative power together with the People's Consultative Assembly and the People's Representative Council. Finally, the judiciary is independent from the

other branches of government. However, the implementation of this model has varied throughout the three main periods in Indonesian history.

In the first period, Indonesia's first president, Sukarno governed between 1945 and 1965. During this period, known as the *Old Order*, the government experimented with both *liberal* and *guided democracy* (Lev, 1978, 2009). Following independence, the national government was faced with a divisive debate about a political system, reflecting regional differences in religions, customs and tradition. Thus, the national government adopted a unitary system, which empowered it to unite the country.

In 1950, the national government introduced *Liberal democracy* under a new constitution, known as the Provisional Constitution of 1950 (Aspinall & Mietzner, 2010). The national government's efforts to address political unrest and to support the US-led model of democracy shaped this policy. This constitution gave great freedom of democracy and a liberalised economy, acknowledged autonomous sub-national governments and mandated a parliamentary democracy (Aspinall & Mietzner, 2010). The political system, however, led to short-lived coalitions because of continued divisions of power among many political parties. There were seven cabinets in eight years, on average, each cabinet lasting just over a year (MoMAF, 2016).

In July 1959, Sukarno re-introduced the 1945 Constitution in order to establish political and economic stability (Lev, 1978). He abolished the parliament and merged the many political parties into three big parties under three categories: nationalist, communist and religious. Sukarno's policy was known as *Guided democracy* (Aspinall & Mietzner, 2010; Cribb, 2001). The guided democracy resulted in political and economic crises, in which the inflation rate reached 600%, leading to a failed bloody coup by the Communist Party of Indonesia in 1965 and the impeachment of the president in 1966 (Aspinall & Mietzner, 2010).

The New Order is associated with the new president, Suharto, who ruled between 1967 and 1998. He inherited significant problems but gained strong domestic political and military support to solve them (Liddle, 1985). Suharto

banned the Communist Party of Indonesia, slaughtered hundreds of thousands of the party's members in Java and Bali[6], allowed only limited freedom of expression and controlled the news media. There were only three political parties under the categories of nationalist, bureaucratic and religious. The president appointed over half the members of the People's Consultative Assembly, determined the nomination of the people's representatives, nominated active military officials to occupy high ranking political posts, and influenced the selection of governors and mayors by Local Representative Councils (Liddle, 1985).

Significantly for this research, Suharto built political support from the military and business elites by granting them privileges to exploit natural resources such as mining, timber, and fisheries (Broad, 1995). He also designed a uniform government structure for all communities (villages) and brought the villages under a hierarchical relationship with the national government (Antlöv, 2003). Suharto successfully led Indonesia to become one of Asia's economic giants. However, due to widespread human rights abuses and the 1997 Asian economic and political crisis, this military-backed general was toppled from power by a student-led movement in 1998, starting the Reform era in 1999.

In his speech to the People's Consultative Assembly in 2000, Habibie, the first president of the Reform era, acknowledged the undemocratic nature of the New Order:

> The New order was characterised by strong domination of the executive over legislature and judiciary, a strong domination of the national government over sub-national governments and a patronage-client relationships between the government and the people (President of Indonesia, 2000, p. 3)

Since 1999, Habibie and his successors have introduced greater political freedom by amending the 1945 Constitution (Webber, 2006). The national government now granted more freedom of expression and allowed the establishment of political parties to contest elections. Habibie also introduced a decentralisation policy in 1999 (Rasyid, 2004), and removed appointed military

[6] According to Kontras (2012, pp. 9-10), a national-based human rights NGO, the number of victims varies between studies.

officials from serving as members of the People's Consultative Assembly (Ellis, 2002). This has had implications for military involvement in managing natural resources and illegal fishing (discussed further in Chapter 5). The assembly's members are only made up of members of the People's Representative Council and the Regional Representative Council with the people directly electing the members of these councils. Furthermore, the national government established the Constitutional Court in 2003 (Mietzner, 2016). This court has the final say in reviewing and cancelling laws that it deems unconstitutional, and in adjudicating disputes between government bodies and disputes between political parties regarding electoral results.

The constitutional amendments strengthened the people's political power (Horowitz, 2013). Previously, the president nominated and selected some members of the national parliament, who later selected the president. People elected members of the parliament who had been nominated by the president. In the amended Constitution, the people directly elect the president, deputy president and members of the parliament (Ellis, 2002). These amendments shifted the power of the president, who had the right to appoint members of the parliament, and the parliament, that in turn would select the president, to the people. More importantly, for the first time, the national government held a direct election of governors and mayors in 2004 (Mietzner, 2010). Table 4.1 summarises the key initiatives in each these three periods.

Table 4.1: Significant political events in Indonesian political history

Order/era	Date	Event
Old order (1945-1966)	1945	Independent from the Dutch
	1950	The national government introduced Liberal democracy: The Provisional Constitution of 1950, Freedom for democracy, Greater autonomy for sub-national governments and Parliamentary democracy.
	1959	Introduction of Guided democracy: Re-introduction of the 1945 Constitution, Abolishment of the parliament, and Rearrangement of political parties into three big parties under the categories of nationalist, communist and religious.
	1965	Abortive coup of the Communist Party of Indonesia
Old order (1967-1998)	1967	Suharto was installed as the President: Banning Communist Party of Indonesia, Killing of the party's members, Limitation of political freedom and the press, Appointment of politicians
	1998	President Suharto was toppled by a student-led movement
Reform Era	1999	Introduction of greater political freedom: Abolishment of the military's political function, Political and financial decentralisation policy, Multiple political parties, Freedom of the Press.
	2003	Establishment of the Constitutional Court
	2004	The first time for direct election of the president, governors and mayors by the people

4.4.2 Sub-national government

There are two tiers of sub-national government in Indonesia: the province and district or city. The 1945 Constitution did not clarify the relationship between tiers of sub-national governments, but, prior to 1999, districts and cities were subordinated to the provinces and, in turn, provinces were subordinates of the national government (Hofman & Kaiser, 2002; Rasyid, 2004). Sub-national governments had to give effect to the policy and laws of the national governments. Until 2004, sub-national governments did not have the power to enact laws (Suharjono, 2014).

The roles of sub-national governments have changed, including the ability to enact laws and regulations after 1999. The national government revised the decentralisation law allowing Local Representative Councils to select governors

and mayors without the national government's intervention, but it did not allow sub-national governments to enact laws and regulation (Suharjono, 2014). However, due to several problems, particularly widespread corruption in the selection process, the national government revised the law allowing the people to directly elect the governors and mayors in 2004 (Mietzner, 2010). This allowed sub-national government to enact district laws and regulations to give effect to higher-level laws and to manage its own affairs autonomously (Government of Indonesia, 2011). The president kept the right to cancel local laws that do not give effect to national interests but, in 2016, the Constitutional Court abolished this presidential power (Kusuma Dewi & Widodo, 2018). This gives sub-national government autonomy in enacting laws and regulations to manage local affairs.

The number of units of sub-national government exploded because of decentralisation in 1999. Prior to 1999, there were 26 provinces, 234 districts and 59 cities (Minister of Home Affairs, 2015). The national government introduced decentralisation in 1999 in response to the demand of natural-resource rich provinces for greater power and to avoid national disintegration (Directorate General of Local Autonomy, 2011). Under centralised natural resource management, these provinces had no power in managing natural resources, resulting in an unfair distribution of benefits for them (Rasyid, 2004). This policy has encouraged the establishment of new units of sub-national government, resulting in 34 provinces, 415 districts and 93 cities in 2015 (Minister of Home Affairs, 2015).

The increased number of sub-national government units partly relates to the provision of the decentralisation laws: Law 22/1999 on *Sub-national government* and Law 25/1999 on *Fiscal balance between national and sub-national governments* (Fitrani, Hofman, & Kaiser, 2005). Law 22/1999, for example, specifies that local community groups can apply to become a new unit of sub-national government and get funds from the national government (Firman, 2009, 2013). This provision led to the creation of tribal-based units of sub-national governments.

Greater power for sub-national government has been the main factor shaping the increased proliferation of sub-national governments (Aspinall, 2016). Prior to 1999, the national government devolved limited autonomy, mostly administrative and development affairs. Other matters, such as politics and finance, were controlled by the national government. According to Rasyid (2004), the then Minister of Local Autonomy, many regions were dissatisfied with the benefit-sharing arrangement of natural resource management and the dominance of the national government in the appointment of officials to occupy political posts in the sub-national government. The introduction of the decentralisation policy in 1999 changed these arrangements because almost all public affairs, except foreign affairs, defence and security, law and order, monetary and fiscal, and religious affairs, were devolved to sub-national governments (Hofman & Kaiser, 2002).

This prompted more ethnic groups in Indonesia to apply for local self-government and to become separate units of sub-national government (Mietzner, 2014), a process which continues at the time of this research with 318 proposals for new units of sub-national governments (Bempah, 2018). The proliferation of sub-national government units based on ethnic group boundaries has fostered greater awareness of ethnic identity (Aspinall, 2016). This is in contrast with previous sub-national government structure, which was imposed by the national government based in Java and influenced by people from the Javanese ethnic group. Importantly for this thesis, the new units of sub-national government based on ethnic groups also reflect vested interests of local elites over natural resources. The increased power of sub-national governments, according to Firman (2009), serves as "incentives for regional splitting" (p.49) which are "captured by local elites" (p.46).

Such splitting is now recognised as problematic and the national government has sought to impose a moratorium on the creation of new ethnic-based units of sub-national governments (Aspinall, 2016; Directorate General of Local Autonomy, 2011; Firman, 2009; Fitrani et al., 2005). However, of relevance for this thesis is the significant increase in these small units of sub-national government, which, as a result of sub-national government law, have the power to manage, and accrue benefits, from natural resource exploitation.

The 1999 decentralisation policy thus has important ramifications for fisheries management and customary fisheries management. The proliferation of new units of sub-national government, for example, is based on ethnic-geographic territory (Aspinall, 2016; Ministry of Home Affairs, 2011). This has resulted in the division of marine environments, exclusion of fishers from other units of sub-national governments and horizontal conflict among fishers (Satria, 2003).

4.4.3 Customary Communities

Prior to independence from the Dutch in 1945, local communities in Indonesia practised customary rules, known as *ulayat* rights, for natural resource management. There are approximately 700 ethnic groups with diverse practices of natural resource management. Customary fisheries management in Indonesia is known by many names, such as *Sasi* in Maluku, *Panglima laut* in Aceh, *Seke* in North Sulawesi, *Rompong* in South Sulawesi, *Awig-awig* in Lombok, and *Papadak* or *Hohorok* in Rote Island (Adrianto & Irving Hartoto, 2009; Oktavia, Salim, & Perdanahardja, 2018; Satria & Adhuri, 2010; H. Susanto, 2011).

In many customary communities, Satria and Adhuri (2010) found that the main goal of customary fishing practices is to assure a fair distribution of fisheries among community members. Meeting the dietary needs of the community and promoting sustainable fisheries uses are secondary goals. The priority of these goals relates to existing relationships among many fishing communities that value reciprocity, trust and solidarity and communality over competition (Jentoft, 2004). In particular, in many communities in NTT province, a lack of dependence on fisheries and marine resources (Fisher, Moeliono, & Wodicka, 1998; Government of Kupang City, 2013) could explain a lack of value over the resources.

Customary practices in Indonesia experienced different recognition before and after independence in 1945. The practices flourished during the Dutch period when customary communities were acknowledged (McWilliam, 2006). Their rights and territory over lands and coastal water were well defined. This

acknowledgement continued after independence because the new government recognised that the rights and interests of customary communities aligned with the national interest under the Constitution. However, McWilliam (2006, p. 46) argues that customary practices "remained for the most part ill-defined and diffused as coherent systems of bounded customary practice and authority over defined jurisdictions." The national government recognised customary practices, but it did not define their rights and territory.

Customary communities' lack of well-defined rights and territory was initially a result of the national government's effort to unite the country and fight ethnic conflicts. Despite its national motto *bhinneka tunggal ika*[7], which means 'unity in diversity', McWilliam (2006) claims that the national government tended to reject the concept of indigenous people having customary rights in natural resource management. The national government tended to use the term isolated tribes (*suku terasing*), rather than indigenous tribes (*suku asli*), in its effort to include and strengthen their voices in public policy. The term *suku asli* has a similar meaning with *pribumi* (native people) vis-à-vis *non-pribumi* such as Chinese-descendant (*keturunan*) and their connection with some ethnic sentiments and conflicts in Indonesia (Moniaga, 2007; Searle, 2002). As a result, the terms *pribumi, non-pribumi* and *keturunan* (descendant) were forbidden from being used in public policy by the national government in 1998 (Carina, 2017).

The democratic change in Indonesia since 1999 has resulted in increased efforts by customary communities to fight for their rights (Henley & Davidson, 2007; Warren, 2005). The Constitutional amendments resulted from the long struggle of customary community groups across Indonesia, under the coordination of the Nusantara Customary Communities Alliance (AMAN), which comprised approximately seventeen million people (AMAN, 2016b; Henley & Davidson, 2007). Customary communities had fought for their rights since the 1980s under an environmental-based NGO called WALHI (Indonesian Environmental Forum), but it became formally acknowledged only in 1999 after the national

[7] A concept that was borrowed from Majapahit Empire, the biggest kingdom in Indonesian history based on Java Island around the 14th century.

government lifted controls over civil organisations (Moniaga, 2004). During the first AMAN summit in 1999, these customary communities stated “if the state does not acknowledge us, neither do we acknowledge the state” (AMAN, 2016b, p. 3). AMAN’s pressure resulted in positive responses from the national government.

The national government has developed several policies to strengthen customary communities. The national government passed Law 6/2014 on *Village,* which defines the meaning of *adat* (customary rules and practices)*, adat* community, *adat* governance, *adat* rights and territory (Antlöv, Wetterberg, & Dharmawan, 2016). *Adat* communities, for example, can establish their own self-governing system or *adat* village, instead of using the formal centralistic governing concept of village, which was introduced by the national government in 1979 (Antlöv et al., 2016; Warren, 2005). An *adat* community needs to be established through a district law before they can claim their rights such as establishing an *adat* village or managing an *adat* forest, to the Ministry of Home Affairs (AMAN, 2016a). The president handed over eighteen certificates of ownership of *adat* forests in 2016 and another nine in 2017 to customary communities (Rahmah, 2017). Customary communities have to meet a long bureaucratic procedure before they can exercise their rights and this became possible only after *adat* communities had been facilitated by NGOs (Lumbangaol, 2017). However, importantly for this thesis, the improvement of public policy on *adat* in natural resource management tends to focus more on forest and other terrestrial resources rather than fisheries and marine resources.

4.5 International actors and institutions

The roles of external actors, agreements and institutions have shaped fisheries management and conservation in Indonesia for decades - both the Netherlands as the former colonial occupier since 1714 and post-war international donors such as the World Bank, USAID and AUSAid. Additionally, various UN agencies such as the World Food Programme (WFP) and the Food and Agriculture Organisation (FAO) together with US-based NGOs, such as the Nature Conservation (TNC) and Conservation International (CI), have also initiated

and influenced marine conservation and management in Indonesia (California Environmental Associates, 2018; Mulyana & Dermawan, 2008).

Dutch involvement in fisheries conservation in Indonesia, known as the Dutch East Indies, was initiated for the first time during its colonial period between 1662 and 1942 (Arnscheidt, 2009; Wiadnya, 2011). The Dutch established several terrestrial national parks in the 1700s for purposes of conservation, while marine parks only began to be established on small islands in the 1900s (Wiadnya, 2011). Komodo Park on Western Flores was the first park established (in 1912) and Western Bali Park was the last park established (in 1941), but these parks did not have marine areas. From 1921, the Dutch started to undertake conservation of fisheries and marine resources. They limited harvests of some marine resources, such as seashells, beyond three kilometres from the coastline, banned blasting and poison fishing and regulated fishing activities in general for both domestic and foreign fishers (Mulyana & Dermawan, 2008).

After independence in 1945, the national government, with Dutch help, through scientific, institutional and funding support of the WWF and FAO (Arnscheidt, 2009; Coral Triangle Initiative Support Program, 2011), continued to manage established marine conservation areas and created more marine parks (Wiadnya, 2011), which influenced the establishment of state ministries. However, the national government only established the Directorate of Protection and Preservation of Nature under the Ministry of Agriculture during the New Order in 1971 (Susanto, 2011). The president strengthened these directorate roles by ratifying the Convention on International Trade in Endangered Species of Wild Flora and Fauna in 1978. As a follow up action, during the Third National Park Congress in Indonesia in 1982, the national government announced the establishment of ten marine parks with support from the Food and Agriculture Organisation (Susanto, 2011). This increased conservation led to the establishment of the Ministry of Forestry and the Ministry of the Environment in 1983. Therefore, between 1983 and 1999, two ministries managed conservation in both terrestrial and marine parks.

The Earth summit in Brazil in 1992, at which the Convention on Biological Diversity was signed, strengthened the national government's commitment to

protect biodiversity. The government enacted Law 5/1994 on the *Convention on biological biodiversity* as a response to the summit. This led to the creation of additional marine parks (Mulyana & Dermawan, 2008). By 1997, the national government had established 24 national parks covering 2.6 million ha across Indonesia (Susanto, 2011).

A significant policy taken by the national government in response to the increased international agreements and the involvement of international NGOs in fisheries management was the establishment of the Ministry of Marine Exploration in 1999 (Susanto, 2011). As its name implies, this ministry focuses on exploring fisheries and marine resources. The ministry's name was changed to the Ministry of Marine Exploration and Fisheries in the same year before it was changed to the Ministry of Marine Affairs and Fisheries in 2000. The national government did not abolish the Directorate of Protection and Preservation of Nature under the Ministry of Agriculture. Thus, the Ministry of Agriculture continued to manage MPAs that had been established, until 2009. This change, according to Mulyana and Dermawan (2008), did not strengthen fisheries integration at the national level.

4.5.1 International NGOs and international donors

The involvement of International donors and NGOs in Indonesia has been because Indonesia is one of the world's most marine bio-diverse countries and the largest archipelagic state, but fisheries are being depleted (World Resources Institute, 2012). It is also because protecting the ocean and fisheries in Indonesia influences the world's state of fisheries (California Environmental Associates, 2018). This is more for Australia, which shares marine ecological boundaries with Indonesia, protecting fisheries in Indonesia will benefit Australia because some fisheries migrate from Indonesia to Australia (Treml et al., 2015).

The then president's invitation for the international community's involvement in restoring fisheries in the Coral Triangle region made way for international NGOs (President of Indonesia, 2009a). Indonesia, together with some countries that share ecological boundaries, has limited technical and financial

capacities (Von Heland et al., 2014). There is an expectation from Indonesian government, particularly for the establishment of the CTI, to share the costs of restoring fisheries with other countries that benefit from restored migratory fisheries in Indonesia (Secretariat of Regional Coral Triangle Initiative, 2009a).

Coral Reef Rehabilitation and Management Project (COREMAP) is the largest multiyear fisheries conservation project in Indonesia involving international donors and NGOs since 1999 (Coral Triangle Initiative Support Program, 2011). The project was funded with loans up to $250 million from the World Bank Asian and Development Bank and grants from the Global Environmental Facility (GEF) and AusAID (McElroy, 2004). It aimed at rehabilitating coral reefs together with their ecosystem and strengthening the livelihoods of people who relied on the resources. Through this project, FAO, TNC, and CI undertook many conservation projects across Indonesia (Resosudarmo, 2005).

The decentralised fisheries management regime in Indonesia in 1999 enabled some sub-national governments to establish MPAs. International NGOs such as TNC, FAO, WWF and CI provided financial and institutional assistance for the national and local governments to manage fisheries and undertake conservation (Directorate General of Marine Coastal and Small Islands, 2013; Provincial Development Planning Agency, 2013). Until 2011, there were 47 MPAs covering over 5 million ha established by both the provincial and district governments in Indonesia. In NTT province, Eastern Flores district established 150,000 ha of MPA in 2013 and the Alor district established over 270,000 ha of MPA in 2015 (WWF, 2017). Some MPAs have also been also established by several local communities across Indonesia to protect mangrove, marine resources and fisheries, but their size on average is just over 10 ha (Faiza, Kusumastanto, Bengen, Boer, & Yulianda, 2010; Kasmidi et al., 1999).

The establishment of MPAs in Indonesia was shaped by the national government's commitments made at the 1992 Rio Earth Summit and subsequent Conference of Parties to the Convention on Biological Diversity. At the 8th Conference of Parties in 2006, the Indonesian president committed to establishing 10 million ha of MPA in 2010 and to double it in 2020. Later, during the 10th Conference in Nagoya in 2010, Indonesia stated its goal was to

establish up to 10% of its marine areas (approximately 31 million ha) as MPAs. The priority marine areas for MPAs are based on a scientific study by Huffard, Erdmann, and Gunawan (2012) funded by the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security. This suggests that MPAs establishment in Indonesia has been shaped by a global agenda and support.

By 2011, Indonesia had established almost 14 million ha of MPAs, with most of these MPAs situated in Eastern Indonesia (Figure 4.2). The size of MPAs has exploded since 2003. There were over 5.4 million ha of MPAs established by the Ministry of Forestry in 2003. The Ministry of Marine Affairs and Fisheries developed just over 700 ha of MPAs. However, the Ministry of Marine Affairs and Fisheries started to lead the establishment of MPAs between 2004 and 2010 with a total size over 9 million ha or about 66% the size of the entire established MPAs (Susanto, 2011).

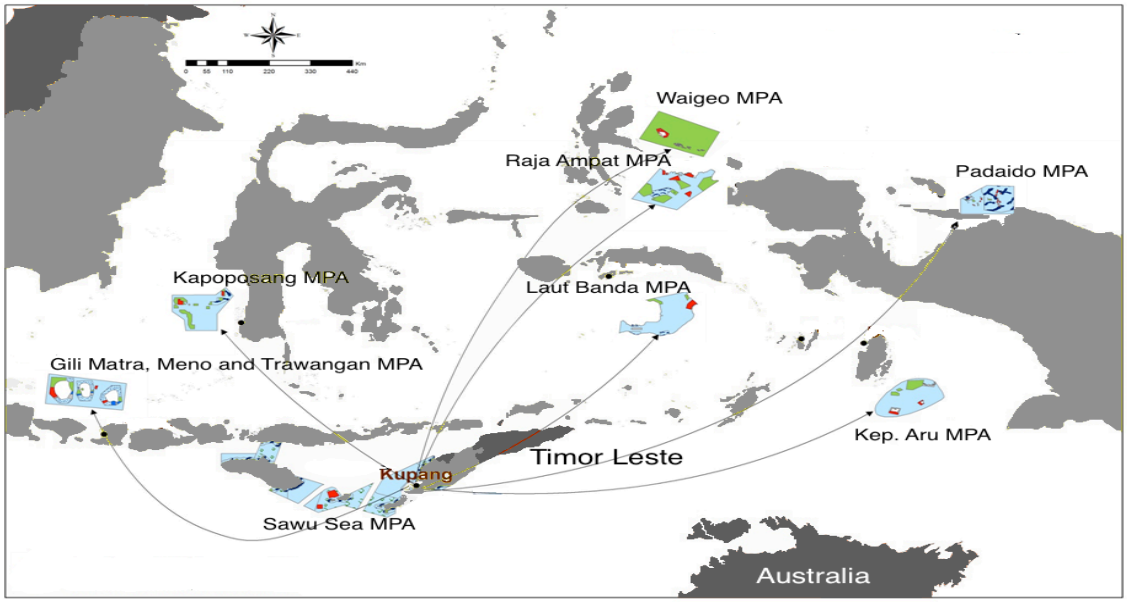

Figure 4.2: MPAs in Eastern Indonesia
Source: MMAF (2008)

The biggest increase was in 2014 when the Ministry of Marine Affairs and Fisheries established the Sawu Sea MPA in NTT province (Figure 4.3), which covers over 3 million ha. Together with over 5 million ha of MPAs established by sub-national governments and local communities, the collected size of the MPAs has met the national government's target to establish ten million ha of MPAs by 2010.

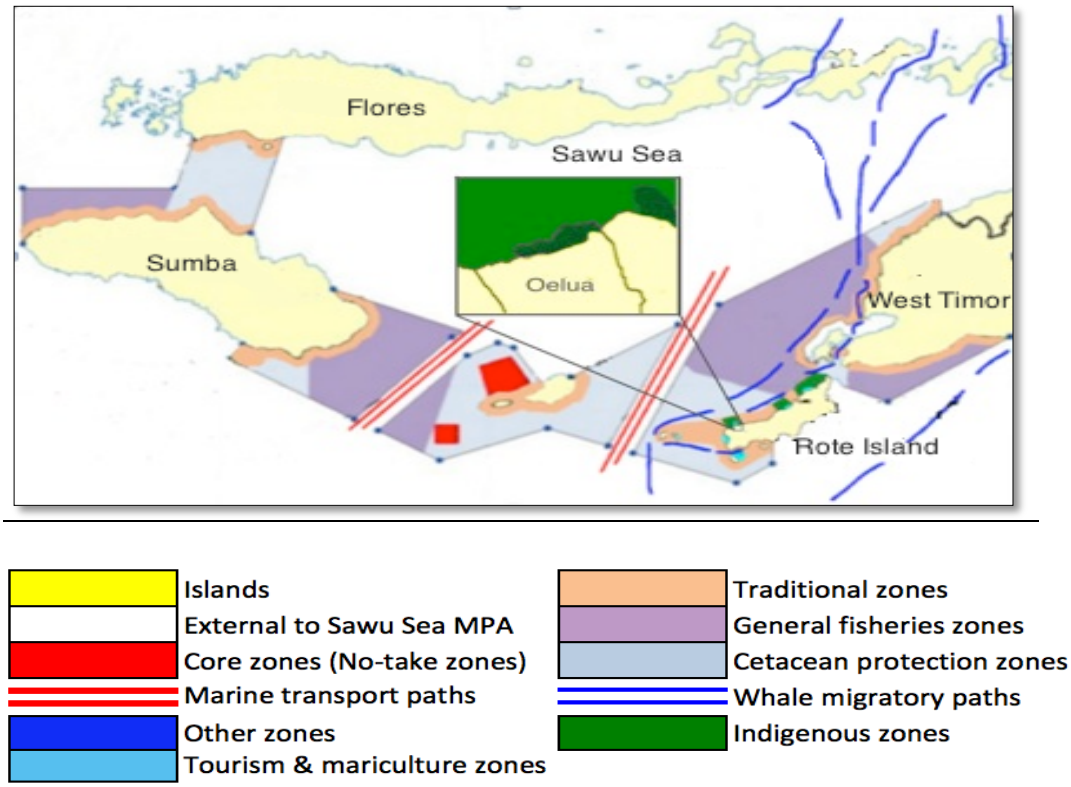

Figure 4.3: Map showing the Sawu Sea MPA in NTT province. Insert shows Oelua village in Rote Island

Source: MMAF (2014)

4.6 Summary

This chapter has set the scene for the empirical work of this thesis. It has outlined the changes in political arrangements in Indonesia since 1945 drawing attention to the significant impact of political instability, tentative democratisation initiatives and in particular decentralisation which empowered ethnically-based sub-national government. The proliferation of new units of sub-national government, with new political and financial resources provided by the national government provides considerably expanded ethnically based natural resource management including greater scope for CFM. This has been a deliberate policy of the national government.

However, the establishment of MPAs and the national government's effort to achieve its goals in establishing 10% of its marine areas as MPAs have a great impact on natural resource management and the application of CFM. The number and size of MPAs that have been established by local communities are

insignificant compared to those established by the government at all tiers. In Chapter 5 I present data from document analysis, which critically reviews the impacts of changing legislation on fisheries management, including CFM.

Chapter 5 Changes to and Implications of Formal Fisheries Management to Customary Fisheries Management

5.1 Introduction

Ostrom's (1990) institutional analysis and development framework identifies existing institutional arrangements as exogenous variables shaping 'the action situation'. Thus, this chapter examines the changes to fisheries institutional arrangements in Indonesia since 1945 by analysing laws and reports of governments at all tiers, the media and NGOs. The purpose is to understand both the changes in fisheries management at all government tiers and the impact of these changes on customary fisheries management (CFM) in managing large-scale marine environments. Throughout Indonesian history, as discussed in Chapter 4, different political systems resulted in different fisheries legislation and policies for applying CFM. This chapter explores the five themes that emerge from the document analysis: economic challenges; conservation approach; democratic changes; poverty reduction; and establishment of the Coral Triangle Initiative (CTI).

5.2 Economic Challenges

Four sub-themes can be identified as arising from the national government's effort to address economic challenges since independence; all have implications for Indonesian customary fisheries management. They are constitutional denial; legalising destructive fishing; combating illegal foreign fishers; and controlling illegal, unreported and unregulated (IUU) fishing.

5.2.1 Constitutional denial

After gaining independence, the Indonesian government acknowledged the customary rights of local communities in the Constitution, but the Constitution contradicted itself in the area of natural resource management. Article 33 states,

"the state takes control over the earth, water and all resources within the earth and uses them for the prosperity of the people". The state respected self-governing communities, but the national government did not acknowledge the rights of customary communities in natural resource management. This inconsistency, according to the National Human Rights Commission (2014), related to the government's goal of pursuing economic growth as a newly independent nation.

Although the government focused on economic growth, this did not lead to significant changes in fisheries management. During the *Old Order,* there was a lack of private investment and fisheries development, largely because the government did not welcome foreign investment (MoMAF, 2016). The national government passed Regulation 64/1957, *Devolution of tasks in fisheries and forestry to sub-national government* to enable provincial governments to manage fisheries. However, this regulation did not significantly impact CFM, because of the high degree of political instability. The Nusa Tenggara Timur (NTT) province (Figures 4.2 & 4.3), which was established in the same year, focused on building administrative and bureaucratic institutions and it did not get involved in exploiting fisheries. Thus, fisheries management was *de facto* monopolised by customary fishers (MoMAF, 2016).

After an absence of legislation during the 15 years following independence, the national government enacted Law 5/1960, *Agrarian basic principles* (Government of Indonesia, 1960). This law recognised private fishing rights, which were seen as a part of the rights attached to the land but limited its uses for social purposes and allowed customary communities to manage natural resources. It stated that the power of the state in natural resource management, as stated in the Constitution, could be delegated to customary communities that still exercised customary rules and practices in line with national interests (Article 3). This meant that this law acknowledged both communal and private property rights with some conditions. However, the law did not elaborate on whether fishing rights were transferable or if they could serve as collateral and have titles. Similarly, the national government did not regulate fisheries conservation and failed to provide regulations to define how communal property rights were to be exercised.

5.2.2 Legalising destructive fishing

During the *New Order*, the national government encouraged foreign trawlers to work in extracting fisheries. Significant harvests of fisheries occurred in 1966 to support economic growth. In its Decree 44/1968, *Appointment of the President*, the People's Consultative Assembly (1968) commissioned the newly-selected president to establish political stability and pursue economic growth with military support. Untapped fisheries were seen as a solution to economic problems during the *New Order* (Bailey, 1986, 1988). The national government passed Law 1/1967, *Foreign business investment,* that granted up to fifty years of fishing licences to foreign investors. In his speech to the National Parliament, President Suharto (1968, p. 64) claimed that "a big source of national income is fisheries ... exports of fisheries are predicted to grow at 6-9% per year". Fisheries and marine resources played important roles in boosting economic growth during his administration.

The NTT government similarly relied on fisheries to improve economic performance. After establishing bureaucratic institutions since its establishment in 1958, the NTT government enacted Regulation 7/1972, *Capture Fisheries and Withdrawal of Marine Resources* aiming to "safeguard fisheries and marine resources and to increase the government's revenues" (p.1). This regulation focused on creating revenue from fisheries harvests. There was no reference to customary communities' rights in the regulation. However, fisheries investment in NTT was limited during the 1970s, as most foreign investments focused on western Indonesia (President of Indonesia, 1982, 1995). This regulation did not result in a significant *de facto* extraction of fisheries and decreased access to fisheries by customary fishers in NTT.

In 1974, the NTT provincial government enacted Regulation 8/1974, *Ownership of the land* that contradicted National Law 5/1960, which had acknowledged fishing rights. Article 2 states, "the lands that were once under the management of customary communities are now managed by the provincial government; the Governor" (point 1), and "individuals or organisations that managed the land as mentioned in point 1 need to have proof of ownership (point 2), which should be in writing and guaranteed by the government" (p.7). This regulation denied

existing land ownership and fisheries rights that were based on stories that were passed down over generations.

The government had inconsistent policies relating to protecting small-scale fishers. In his 1982 annual speech at the National Parliament, the President (1982) acknowledged that the total catch of small-scale fishers at the national level decreased by 40% in 1977. The President did not directly link the decrease to the increased exports, but he acknowledged, “trawling fishing [by outside large fishers] does harm to the marine ecosystems and distresses local small and traditional fishers” (p.25). Thus, the President issued Decree 39/1980, *Abolition of trawlers* to protect small-scale fishers from competition with large-scale fishers. This decree limited trawling in order to 1) maintain the sustainability of fisheries, 2) protect small-scale fishers, and 3) avoid social conflicts. However, two years later, the President issued the contradictory Decree 85/1982, *Use of shrimp nets* that allowed the exploitation of shrimp by large-scale fishers. The enactment of this decree was a response to a provision of the Presidential Decree 39/1980, which states, “to avoid reducing shrimp production due to the abolition of trawlers, a national shrimp production programme needs to be maximised” (Article 7). The national government pursued economic benefits at the expense of customary fishing rights and did not consider destructive fishing to be illegal.

5.2.3 Harvesting shared fisheries

Besides economic interests, legalising destructive fishing methods relates to the competition in harvesting cross-country migratory fisheries. As a response to increased illegal foreign fishing in marine areas shared with other countries, the MMAF passed Regulation 06/2008, *Uses of Trawlers* in the northern marine area of East Kalimantan province. This province shares marine borders with Malaysia and the Philippines. When introducing the regulation, the minister argued, “trawlers are compatible with geographic characteristics of marine areas in this province” (point b). The government thus legalised destructive fishing methods for economic interests.

This regulation marginalised small-scale fishers. The national government divided the marine areas into two zones: Zone I (1-4 nautical miles) for ships less than 5 gross tonnage and Zone II (4-12 nautical miles) for ships between 5 and 30 gross tonnage. The district and provincial governments managed the licences for these zones, respectively. This regulation exempted both small-scale fishers and other fishers that used ships less than 5 gross tonnages from needing fishing licences. However, according to Halim (2016), the Secretary-General of the People's Coalition for Just Fisheries, this provision made way for non-small scale fishers to use small ships to operate in Zone I. There were 2,862 trawlers operating in these areas, which resulted not only in the depletion of the fisheries, but also the marginalisation of small-scale fishers.

The enactment of Regulation 06/2008 was partly shaped by the government's difficulties in combatting foreign illegal fishers within the marine borders. Halim (2016) quotes the Acting Governor of East Kalimantan who said, that by allowing trawling in these areas, the fishers would help the national government to undertake surveillance in the areas. This supervision would gather information for the government, so it could combat foreign illegal fishers in these areas. This suggests that the government had become entrapped in a dilemma that involved taking part in a destructive competition to exploit the resources.

5.2.4 Corruption in fisheries management

According to Transparency International (Merkle, 2018), corruption in Indonesia is associated with the *New Order*, under which the country experienced high economic growth under a totalitarian regime. It started as President Suharto built political support by granting privileges to political and military elites to engage in profit-oriented activities, including natural resources extraction (Broad, 1995). In fisheries management, however, the Indonesian Navy, which was responsible for law enforcement in the seas, used its authority to make money from illegal fishing by collaborating with foreign trawlers (Heazle & Butcher, 2007).

The practice of corruption continued during the *Reform Era* (President of Indonesia, 2009b), although the MMAF (2007) claimed that in 2004 the number of illegal vessels operating in Indonesia dropped from 7,000 vessels to just over 1,000 vessels. The President of Indonesia (2014b) stated that over 90% of these ships were involved in IUU fishing. This illegal activity resulted in financial losses of between US$ 2.5 million (Audit Board of Indonesia, 2013) and US$20 million (MoMAF, 2015a) every year arising from the loss of royalties and marine ecosystem destruction.

Corruption involving Indonesian officials has always been a problem contributing to illegal fishing, but there is no formal acknowledgement of this problem. In his annual speech to the People's Consultative Assembly, the President of Indonesia (2007) reiterated the national government's commitment to fight corruption and reduce military involvement in profit-oriented businesses associated with fishing, which were the legacy of the *New Order*. This commitment is in line with the CTI's priority of actions to combat IUU fishing. However, the CTI does not highlight the role of corruption in IUU fishing (Secretariat of Regional Coral Triangle Initiative, 2009b). Similarly, there is no acknowledgement from the president concerning the involvement of the military in illegal fishing, nor is it included in the Strategic Plan of the MMAF 2015-2019 (MMAF, 2015b).

Information about corruption in fisheries has been made available by independent researchers (Heazle & Butcher, 2007; Siry, 2006), who blame the Navy and Fisheries officials for supporting IUU fishing. De Alessi (2014, p. 579) reveals that "the Navy cooperative 'INKOPAL' apparently holds fishing licences and has business relationships with foreign fishing companies fishing in Indonesian waters". Heazle and Butcher (2007, p. 278) confirm that the Navy lacks resources to undertake patrols but "there is a great deal of evidence that naval patrols have demanded bribes from vessels that they have detained". They further add that "in recent years the most common estimate has been that the military receives about 30% of its operating expenses from the official budget" while its "business enterprises [including INKOPAL] contributed [the other] 70 percent" (p.279). Thus, corruption is a big problem contributing to IUU fishing.

Since 2014, the new president, Joko Widodo, has pledged to fight corruption and IUU fishing (President of Indonesia, 2014a, 2014b). The law enforcers have taken serious action tackling illegal fishing, resulting in a decrease in illegal fishing and an improvement of fisheries, by detaining and sinking over 300 foreign illegal ships between 2014 and 2017 (California Environmental Associates, 2018; Minister of Marine Affairs and Fisheries, 2018; Setyadi, 2015). The Marine Stewardship Council (MSC) has certified some big fishing companies in Indonesia for meeting international standards for sustainable fishing (Summers, 2019). These changes have been possible because the president showed support for law enforcers, the constitutional court and the anti-corruption commission (Merkle, 2018).

Despite the president' strong political will, law enforcement in the ocean is still lacking and corruption in general is still high. The lack of law enforcement is because the country has limited financial and human resources to enforce the law in the sea. The Maritime Security Agency, for example, only possesses 22 ships or under 10% of the required number of ships (California Environmental Associates, 2018). More importantly, corruption in all branches of power is still high. In 2019, Indonesia scored 38 out of 100 (completely clean) on Transparency International's corruption index, an increase from 34 in 2014, ranking it 98th out of 180 countries (Transparency International, 2018). This corrupted regime continues to limit law improvement in fisheries (California Environmental Associates, 2018).

5.3 Conservation Approach

Following independence, it took the national government over four decades to institutionalise the conservation of natural resources. Changes to strengthen CFM have been gradual. Initially, the national government externally imposed conservation goals, but the government did not acknowledge existing customary conservation practices. The national government made significant changes to acknowledge the role of CFM in conservation by introducing a zone-based conservation approach almost a decade after the *Reform era,* which started in 1999. These gradual changes are explained in the following two subsections.

5.3.1 State-based conservation approach

In 1990, for the first time since the independence, the Indonesian government enacted Law 5/1990, *Conservation and natural resource and the ecosystem*. This law adopted a new conservation ethic that focused on conserving species, genetic diversity and ecosystems (Article 5). After adopting the United Nations Convention on Biological Diversity (CBD) in 1992, the Government strengthened its commitment to protect the biodiversity by enacting Law 5/1994, *Convention on Biological Diversity*.

Law 5/1990 and Law 5/1994, however, did not enable a significant involvement of local people in conservation. Law 5/1990 framed conservation as a government function and ignored customary conservation practices. It stated: "the involvement of people in conservation is guided and mobilised by the government through various beneficial activities" (Article 37(1)), such as "education and training" (Article 37(2)). It allowed the national government to declare conservation areas without getting any approval from local communities. As a result, in its recent inquiry concerning the protection of customary rights, the National Human Rights Commission (2016) confirmed that conservation has resulted in lengthy conflicts between formal laws and indigenous practices that could displace customary communities from their cultural livelihoods.

The NTT government took the same approach as the national government in managing conservation. The provincial government had established several marine parks in NTT, but their management does not involve local people (Directorate of Marine Conservation and Fisheries Biodiversity, 2013a, p. 8). The Provincial Regulation 5/1994, *Management of Protected Areas* shaped this approach. This regulation viewed conservation as a provincial government function; it did not make provisions relating to customary conservation rules and practices:

(1) The governor undertakes coordination for implementing regional regulations in the establishment of protected areas;
(2) The coordination is undertaken by promoting and sharing information with communities; and
(3) Awareness of the communities' responsibilities are increased through training and education (Article 17)

5.3.2 Zone-based conservation approach

The approach to fisheries management changed as the national government adopted a zone-based conservation approach based on Law 31/2004, *Fisheries*. The established marine conservation area, about 2.6 million ha, took a species-based conservation approach, which did not allow any goals other than conservation. The MMAF regulated further this approach in Regulation 17/2008, *Conservation areas in coastal areas and small islands*. It states that in the zoning approach, a conservation area is classified into different zones, based on their characteristics, enabling diverse uses including operation zones for the surrounding small-scale fishers. Marine protected areas are established not only to protect fisheries, but also to secure local fishers' access to fisheries.

Indonesian MPAs meet global standards with some differences. According to the National Government Regulation 60/2007, *Conservation of fisheries,* an MPA is "a marine area, which is protected and managed according to a zoning system to achieve sustainable fisheries and environmental management" (Article 1.8). The International Union for Conservation of Nature [IUCN] (1999, p. xi) defined an MPA as "any area of the intertidal or sub-tidal terrain together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment". The IUCN's definition of MPAs does not clarify a zoning system approach as adopted by Government Regulation 60/2007. However, some IUCN's categories of MPAs, according to the Directorate of Marine Conservation and Fisheries Biodiversity (2013b, p. 5) are compatible with some categories of MPAs according to Government Regulation 60/2007 (Table 5.1).

Table 5.1: Comparison of MPA categories

IUCN	**Indonesia**
Strict Nature Reserve/ Wilderness Area	*Cagar Alam*
National Park	*Taman Nasional Perairan*
Natural Monument	Not applicable
Habitat/Species Management Area	*Area Suaka Margasatwa*
Protected Landscape/Seascape	*Taman Wisata Alam*
Wilderness area	Not applicable
Managed Resource Protected Area	Not applicable

Source: IUCN (1994) and the National Government Regulation 60/2007

In establishing MPAs, the national government requires the management to meet the social and cultural conditions of local communities. The conditions, according to Government Regulation 60/2007 include "the support level of local communities, the likelihood of a conflict of interests and threats, indigenous knowledge and customary rules" (Article 9). Involvement of customary communities in the preparation of planning documents for MPAs was established by further conditions of MMAF. In the MMAF Regulation 30/2010, *Management plan and zoning of MPAs,* "the head of the national marine conservation agency is commissioned to establish a working group that consists of … community groups and customary communities" (Article 31 (1)). In managing the MPAs, Article 18 of the Government Regulation 60/2007 recommends the management to establish "a partnership with sub-national government and communities". These regulations show that the national government is willing to apply customary fisheries practices in managing MPAs.

In addition to existing MPAs, the MMAF Decree 17/2008, *Conservation of marine areas in coastal and small islands* recognises marine conservation areas (MCAs). MCAs are defined as "marine areas for customary and cultural protection that have special archaeological and historical values, historical maritime sites, and sites for religious and customary rituals, which are in line with efforts to conserve coastal areas and small islands" (Article 1 (21)). The government recognised customary MCAs, but it did not allow customary communities to manage them autonomously (Articles 23 and 26).

5.4 Changes to Democracy

Improved legislation for customary communities in regarding natural resource management became possible after the *New Order*'s regime changed in 1999. As discussed below, democratic changes, including autonomous district governments, increased the power of the people. This occurred after a series of amendments to the Constitution and the introduction of several laws under the *Reform Era*'s regime, particularly the change to the direct election of the president. This resulted in a variety of outcomes.

5.4.1 Autonomous district governments

Increased fisheries exploitation began when the government decentralised natural resource management in 1999. Through Law 22/1999, *Sub-national government*, which replaced Law 5/1974, and later replaced by Law 32/2004, the national government divided fisheries management among the levels of government. The provincial governments managed marine areas within 4-12 nautical miles from the shoreline, and the district governments managed the marine area up to 4 nautical miles from the coastline. The district governments were entitled to raise revenue from the harvesting of marine resources within 4 nautical miles. This law established territorial use rights in fisheries for the district governments.

In sharing benefits from fisheries, however, the national government ignored the marine jurisdiction of the district governments. The national government passed Law 25/1999, *Fiscal balance between national and sub-national governments*, which specified sources of the district government revenue that included levies on the production of fisheries and other marine resources. Nevertheless, it did not make provision regarding levies on small-scale fishers and it distributed collected levies into equal sums for all the districts in the country, regardless of the size of the levy contributed per district (Article 6). The district governments with no shoreline gained the same amount of levy as the districts that had shorelines. This decision saw fisheries and marine resources as belonging to all districts or open to fishers from any district. This discouraged ownership and improvement of fisheries in the districts with a shoreline because the law saw fisheries as a resource belonging to all the districts.

The introduction of decentralised fisheries management has resulted in intensive fisheries exploitation and conflicts (Mulyana & Dermawan, 2008). Law 22/1999 not only divided up marine areas for district governments to autonomously manage, but also encouraged the district government to exploit fisheries. The Indonesian Institute of Science reported that the division of marine jurisdictions limited the previous cross-district fisheries access for local fishers (Satria, 2003). Many district governments and fishers saw this autonomy as an opportunity to be financially independent by exploiting fisheries and limiting fisheries access for fishers from other districts, leading to

conflicts between small-scale fishers. The Director General of the Finance Ministry stated:

> Regarding local regulations that focus on increasing local revenues and imposing fees [on local activities of the people], it is because many [the provincial and district governments] view local autonomy as auto-money (Hen, 2008, p.1) .

The NTT provincial government shared the same view about the role of fisheries as it sought to boost economic growth from the exploitation of fisheries. Thus, it passed Regulation 13/2001, *Examination of Fishing Boats* and Regulation 11/2003, *Revenues from Fishing Business Permit*. These regulations aimed to increase the provincial government's revenue, reflecting the priority it gave to economic goals over customary fisheries. These regulations did not exempt small-scale fishers from having permits for fishing and trading activities. The provincial government was inconsistent with Regulation 8/2001 that focused on managing fisheries resources to "reduce unemployment and the poverty rate" (Government of NTT, 2001b, p.16) .

The marginalisation of customary fishers increased as the national government tried to regain control over decentralised fisheries management. The government passed Law 27/2007, *Small island and coastal management*. The law aimed to establish integrated fisheries management and strengthen fishing community participation, which was absent under decentralised fisheries management (Siry, 2011). However, this law introduced a new private property right, known as *commercial use rights of coastal and small islands* that could be granted for 20 years and could be extended for a further 20 years. Furthermore, it did not acknowledge the existing customary rights of local communities; rather, it required customary communities to apply for this right (Siry, 2011). The law was made to facilitate economic investments in small islands across districts, instead of supporting customary fishers in fisheries management.

5.4.2 Improved community legal rights

The Constitution strengthened community rights following amendments between 1999 and 2002. In the last amendment, the government added a

specification to Articles 18, 24 and 33 of the Constitution. While Article 24 established the Constitutional Court, Article 33 establishes principles of economic democracy such as justice and sustainability in natural resource management. Article 18 clarifies customary rights in natural resource management:

> The state acknowledges and respects customary communities and their traditional rights as long as they still exist, and the practices are in line with the current development of the society and the unitary principle of the state, which will be regulated by state laws.

In response to the specification of the Constitution, the government supported small-scale fishers by passing Law 31/2004, *Fisheries*. This law stated, "Fisheries management aims to improve the well-being of small-scale fishers" (Article 3). Therefore, "fisheries-levies are not imposed on small-scale fishers and farmers" (Article 48). It also extended the territorial use right for small-scale fishers from within 0-3 nautical miles, as regulated by Decree of the Agriculture Ministry 607/1976, *Fishing capture zones,* to 0-4 nautical miles. In addition, it stated, "Small-scale fishers can fish in marine areas all over the country" (Article 61). Thus, for small-scale fishers' access to fisheries is not confined to the marine areas under the jurisdiction of district governments (within 4 nautical miles), as regulated by Law 22/1999, *Sub-national government*.

These amendments allowed people to review laws and regulations that are inconsistent with the Constitution. A review and annulment of Law 27/2007, *Management of the Coastal Zone and Small Islands,* was an example of significant changes. The law granted commercial use rights of coastal and small islands to the private sector and enabled the conversion of MPAs into commercial fishing areas, which denied the customary rights of local communities. This law was annulled because the Constitutional Court (2010, pp. 167-168) found that the law "conflicted with the Constitution". The Constitutional Court enables people to challenge the legal rulings of their representatives that may conflict with the Constitution.

5.4.3 The leadership of the president

Presidential leadership has also been important for fisheries policy. The amendment of the Constitution in 2000 strengthens the power of both the president and the people. According to Article 6A, "the people directly elect the president and deputy of the president". This can be seen in the commitment of the current President, Joko Widodo, who was directly elected by the people for the first time in 2014. He stated at his inauguration that he would transform the country into a "global maritime axis" in order to improve food security and strengthen the fishers as the main players in this process (President of Indonesia, 2014a).

The president has committed himself to enforcing the law and improving fisheries for the benefit of small-scale fishers (President of Indonesia, 2015). In the *Medium Term Development Plan (2015-2019),* the President (2015, p. 67) aims to secure "territorial sovereignty and fisheries [from foreign trawlers and IUU fishing] in order to sustain independence in economies". During the development of the Five-Year National Development Plan 2014-19, the President challenged his staff:

> Two months ago, I had given the order to take strict action on IUU fishing. I ordered ships to be sunk straightaway. But I had to repeat my order three times before some ships were sunk. I wonder why I should give the order three times. Why is once not enough to sink the ships? Over 90% of four to seven thousand ships operating in Indonesia are illegal, but why have only three ships been sunk? I am expecting more to be sunk (2014b, p. 2).

As a response to the President's commitment, the MMAF issued Regulation 56/2014, *Moratorium of new entrants to capture fisheries businesses in Indonesia* and Regulation 2/2015, *Bans of Trawlers and Seine Nets in the Whole Marine Area in Indonesia*. Similarly, the President (2016) issued Regulation 44/2016, *List of negative investment,* in which the government banned foreign ships from capturing fish in Indonesia. These regulations, among others, outlaw destructive fishing that had been legally practised for decades.

The improved implementation of legislation has produced a significant improvement in both fisheries and the incomes of small-scale fishers. The

number of ships detained, burned and sunk in 2014 was 24, rising to 117 ships in 2015, 115 ships in 2016 and 127 ships in 2017 (MMAF, 2018). This strict action has reduced fisheries exploitation by as much as 30-35% and the rate of *maximum sustainable yield* has doubled from over six million tonnes in 1997 to over twelve million tonnes in 2017 (MMAF, 2018). The number of catches of small-scale fishers in some marine areas has increased by 30% (Setyadi, 2015). Obviously, the exclusion of outside fishers has improved fish stocks to the benefit of small-scale fishers.

5.5 Poverty Reduction

The goals at different tiers of government are contradictory in respect to the roles of fisheries in alleviating poverty. While the national government tended to commercialise fisheries, the provincial and district governments relied on fisheries to solve poverty. However, the provincial and district governments focused more on facilitating customary fishers' access to fisheries rather than on strengthening their customary rights.

5.5.1 Conflicting institutional provisions

The marginalisation of small-scale fishers during decentralised fisheries management was due to the lack of protection of their rights. Mulyana and Dermawan (2008) linked the problem to the lack of provisions relating to the rights of customary communities in Law 22/1999. Similarly, AMAN (2016) highlighted the absence of laws promoting the specification of Article 18B (2) of the amended 2002 Constitution on customary rights. The government decentralised natural resource management to sub-national governments in 1999 without clarifying and protecting the rights of customary communities.

The national government highlighted the importance of fisheries management for supporting small-scale fishers. However, fisheries management at the national level is not shaped by a poverty reduction strategy, so it does not support the social challenges in NTT, which is one of the poorest provinces in Indonesia. The operation of fisheries was undertaken mainly by large-scale outside fishers. The national government did not introduce local specific local policies to empower

small-scale fishers to increase their benefits from fisheries. The poverty rate in NTT in 2001 was over 40% (Government of NTT, 2001a, p.12) , which was far higher than the national poverty rate in Indonesia of about 18% (Bureau of Statistics, 2007).

The high rate of poverty in NTT contrasted with its abundant fisheries. The Government of East Sumba District (Kewa Ama, 2008) and the Government of Kupang City (2013) shared the same view that poverty was correlated with the livelihoods of the local people. Most people rely on subsistence terrestrial-based activities, particularly agriculture, leaving outside fishers to benefit from the abundant fisheries. As the Governor (2002, p. 5) stated in Decree 24/2002, *Fisheries culture and capture movement*, "fisheries and marine resources are among the natural resources that are high in abundance", but the resources did not actually benefit local economies. He added, "the contribution of fisheries and marine resources was only 3.15% of the regional GDP in 1999; it only employs less than 5% of the existing manpower" (Governor of NTT, 2002, p.5) . Thus, since 1999, the provincial government has promoted marine-based livelihoods through several programmes (Bria Seran, 1999; Governor of NTT, 2002).

The provincial government had a similar view to the national government of the importance of fisheries for poverty reduction, and it has taken further actions. In the *Regional Priority Development Plan 2001-2004*, the Government of NTT (2001b, p. 74) emphasised "empowerment of local communities in natural resource management [fisheries management]" to address poverty. The provincial government introduced the "Fisheries capture and culture movement" *(Gemala)* programme in 2001. As elaborated in Decree 24/2002, the programme aims to:

> reduce poverty by prioritising fisheries and marine sectors supported by the other sectors, such as spatial planning, transportation and coastal-based activities at the community level (Governor of NTT, 2002, p.13) .

The provincial government introduced this 'Fisheries capture and culture movement' policy in 2002 in order to alleviate poverty among local people (Governor of NTT, 2002) . The provincial government sees marine-based

livelihoods as a way out of poverty for local indigenous people. Thus, the provincial government did not limit whale-hunting activities although the whales are protected due to their endangered state. Juxtaposed to this, through Regulation 1/2011, *Spatial Plan 2010-2030*, the provincial government recognised marine areas for traditional whale watching as a cultural tourism event. The district government supported this policy with a focus on providing subsidies and training for local people to undertake marine-based fisheries and aquaculture.

The provincial government's priority in fisheries management shaped its policies in acknowledging customary rights. In Provincial Regulation 3/2006, *Environment Control*, the government recognises *ulayat rights*, which are defined as "the highest rights of *adat* communities to manage and use the environment in responsible and sustainable ways for present and future generations" (Article 1 (28)). However, the provincial government did not establish a particular timeline for local communities to exercise this right. Article 21 states:

> The provincial and district governments are required to identify, examine and analyse the environment regularly regarding the environment potential that can be managed by the communities, *adat* communities, and private companies".

In addition, the Provincial Regulation 3/2006 clarifies the rights of customary communities in environmental protection and control. Article 7 states, "in managing the environment, the sub-national governments have to … protect indigenous knowledge according to local *adat*". Therefore, the regulation recognises the rights of individuals to obtain information, get compensation and take legal actions against environmental activities that are not sustainable and in conflict with customary rules and practices. As Article 20 (3) of Regulation 3/2006 specifies individuals can:

a. harvest natural resources according to their capacity and allocation in sustainable ways;
b. get information from the sub-national government about control and use of the environment;
c. get compensation for losses of rights of control over their environment;
d. get compensation for losses of access to the surrounding environment as sources of their livelihoods;
e. manage the environment according to *adat* laws;

f. lodge objections and lawsuits for environmental approvals and disapprovals.

5.5.2 Improved legislation

The changes toward the empowerment of customary communities in environmental management influenced institutional arrangements in fisheries management. The provincial government enacted Regulation 4/2007, *Coastal and Small Island Management,* which clarifies the obligation of the government and businesses, and acknowledges the rights of customary communities. Article 24 states "the government acknowledges, respects and protects the rights of customary communities over coastal and marine areas that have been managed for generations in sustainable ways". Similarly, in Article 20 (2), the provincial government requires private permit holders to "acknowledge, respect and protect the rights of customary communities and/or local communities" in harvesting coastal and marine resources. However, the regulation does not clarify what it means by 'managed for generations' and 'sustainable ways'. Moreover, the provincial government has not passed any law since the establishment of this regulation, over a decade ago, in order to identify marine areas for customary communities to exercise their *ulayat* rights.

The provincial government strengthened its support for customary fishers in Regulation 1/2011, *Spatial Plan of NTT Province 2010-2030*. In this regulation, the provincial government views both natural and cultural resources as equally important. The government highlights the roles of customary rules and practices for natural resource management. This provision did not exist in Regulation 9/2005, *Spatial Plan of NTT Province 2006-2020*, which focused only on natural resource management. Article 4 of Regulation 1/2011 states:

> The spatial plan is undertaken to establish the NTT province as an archipelagic and maritime province by focusing on the development of sustainable natural resources and local culture, to achieve quality, just and prosperous communities.

The provincial government, however, is inconsistent with its own regulations. Regulation 1/2011 (Article 34), for example, recognises marine areas for traditional whale watching in Lembata district as a cultural tourism event, but the regulation does not categorise the marine areas as a customary marine

conservation area, as regulated by Article 1 of the MMAF Decree 17/2008, *Conservation of Marine Areas in Coastal and Small Islands*. The customary marine conservation areas reflect the provincial government's acknowledgement of customary fishers' rights to manage the area according to their customary rules and practices. The provincial government passed Regulation 4/2007 *Management of the Coastal and Marine Environment*, but it does not particularly refer to customary marine conservation areas. This policy is in contrast with Provincial Regulation 3/2006, *Environment Control,* which highlights customary community-based natural resource management. Despite the efforts the provincial government has introduced, there are no marine areas within which customary fishers in NTT have exclusive rights to manage fisheries, according to customary rules and practices.

The provincial government focuses more on facilitating local people's access to fisheries rather than enabling the communities to manage fisheries according to customary rules and practices. However, its programme has enhanced the marine-based livelihood of local people. After five years of *Gemala* implementation, the provincial government claimed, "District and city governments [in NTT] have replicated *Gemala*; it has created jobs and reduced unemployment" (Diaz, 2016, p. 1). Seaweed farming has been the most favourable aquaculture activity.

5.6 Coral Triangle Initiative and Its Implications

There are also multi-national politics, which provide a new direction for fisheries management. The year 2009 marked a new approach to fisheries management in the Indo-West Pacific region as the Indonesian government, together with Malaysia, the Philippines, Papua New Guinea, Solomon Islands and Timor Leste, established the Coral Triangle Initiative (CTI). Thus, this section identifies changes brought by the CTI, which will influence how the government across tiers applies customary fisheries management in the Sawu Sea MPA. It first outlines the institutional arrangements of the CTI, subsequent legislative and regulatory changes at different tiers of government, the

management framework for the Sawu Sea MPA, the support of international donors, and, finally, consultation with affected communities.

5.6.1 The institutional arrangements of the CTI

The CTI aims to address both fisheries depletion and the protection of small-scale fishers. The *CTI's Leader Declaration*, signed on the 15 of May 2009, asserts that it aims to "address threats to the marine, coastal and small island ecosystem through accelerated and collaborative action", while recognising "the urgent need to address poverty and strengthening food security" (Secretariat of Regional Coral Triangle Initiative, 2009b, p. 1). However, the leaders agreed that *the CTI Regional Plan of Action*, containing the principles and goals of the CTI that had been endorsed previously, is "a living and non-binding document" and it 'takes into consideration laws and policies of each country". These two documents shape the CTI institutional arrangement.

There are several governing bodies with different responsibilities established for preparing and establishing the CTI. The highest body is the Council of Ministers, which is made up of government ministers from all member countries who have the responsibility to convene and formally endorse the establishment of CTI for leaders of member countries. Based on the Leaders' declaration (Secretariat of Regional Coral Triangle Initiative, 2009a), the Committee of Senior Officials representing member countries (in collaboration with international NGOs and donors) developed the Regional Plan of Action. The Regional Secretariat facilitates the National Coordinating Committees in each member country to develop *the National Plan of Action* (see Figure 5.1).

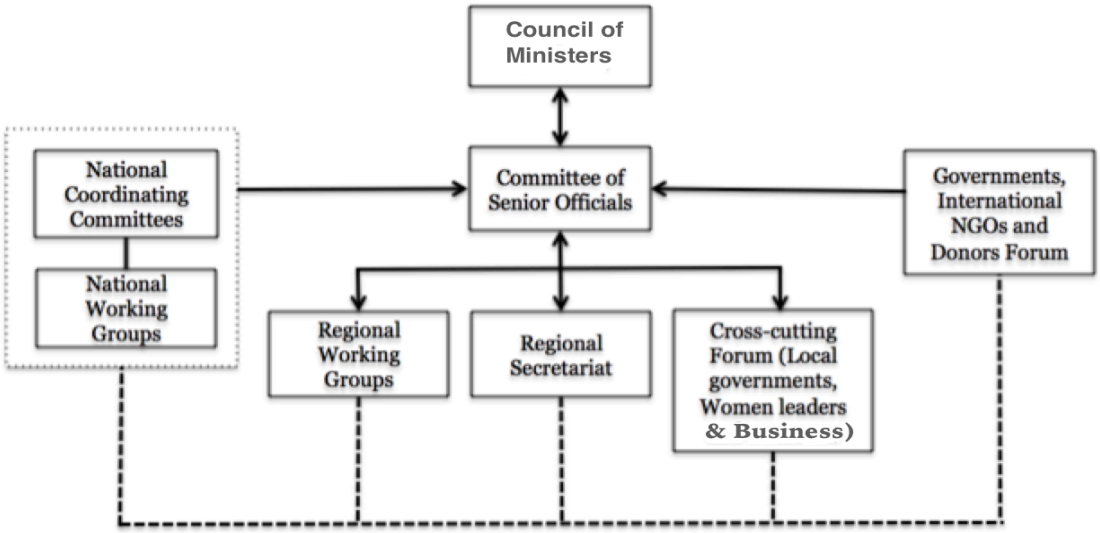

Figure 5.1: The CTI's governing bodies
Source: Lukman, Pratikto, and Putri (2017, p. 16)

The Regional Plan of Action established the CTI's principles, goals, actions and timeline. The CTI's goals include the application of an ecosystem approach to fisheries management (EAFM) and the establishment of marine protected areas (MPAs). It aims to achieve these goals through principles such as people-centred biodiversity conservation, poverty reduction, fair benefit sharing, in addition to inclusiveness and engagement of multiple stakeholders (Secretariat of Regional Coral Triangle Initiative, 2009b).

Despite cooperation and collaboration, the Regional Plan of Action, by which the CTI Regional Secretariat facilitated the development of the *National Plan of Action*, is not a binding document. The CTI allows individual countries to develop plans, rules and enforcement strategies without being confined by a higher authority (Secretariat of Regional Coral Triangle Initiative, 2009a). Thus, the National Coordinating Committee of member countries independently undertook the development of the *National Plan of Action*. However, as presented below, the Indonesian plan of action (Indonesia National Coordinating Committee of the CTI, 2009) reflects the CTI regional plan of action.

5.6.2 Legislative and regulatory changes at the national level

The development of the Indonesian plan of action is guided by the CTI regional plan of action (Indonesia National Coordinating Committee of the CTI, 2009). The plan sets out guiding principles, goals, targets, and priority action reflecting those of the CTI plan. In response to the CTI's goal of establishing MPAs, for example, an action that the Indonesian government established in the national plan of action is to "enhance and ensure the involvement of indigenous and local communities and relevant stakeholders in MPA planning and management" (Indonesia National Coordinating Committee of the CTI, 2009, p. 40). However, actions relating to building a collaboration in the national plan is undertaken "between neighbouring protected areas across national boundaries" (p.22) and "with other countries and donor agencies" p.42). Unfortunately, collaboration is not established to involve all stakeholders, particularly customary fishers.

The regional and national plans of action resulted in several changes, which, however, did strengthen small-scale fishers' fisheries access. The national government enacted Law 45/2009, *Fisheries* that clarified the meaning of "small-scale fishers as people whose livelihoods involve catching fish to meet daily needs using boats and ships less than five gross tonnage" (Article 1(11)). It excludes small-scale fishers from the obligation to hold fishing licences (Article 27) or pay fisheries levies (Article 48). More importantly, this law imposed heavy penalties on IUU fishing, which had been the main challenge faced by small-scale fishers. Article 76A states, "equipment and/or tools used in and/or produced from fisheries crimes can be seized for the state or destroyed after getting approval from the court". The previous Law 31/2004 did not have these provisions.

Improved legislation during the *Reform Era* increased acknowledgement of customary rights following the CTI establishment. For example, as a response to the annulment of Law 27/2007 by the Constitutional Court in 2010, the national government passed Law 1/2014, *Management of the coastal zone and small islands*. The Constitutional Court (2010, p. 164) acknowledged *ulayat* rights over coastal areas and small islands. This law no longer favours the

commercialisation of fisheries at the expense of customary fishing communities as the old one did. However, in order to have legal power, *ulayat* rights have to be codified and enacted in formal written laws: local regulations at the district or city level (Constitutional Court of Indonesia, 2012). This arrangement leads customary communities to depend on the district or city governments.

Law 1/2014 resulted in a further strengthening of customary communities in natural resource management. The national government clarified the institutional arrangements of villages through Law 6/2014, *Villages*. The previous law 5/1979, *Village governance* was annulled in 1999 after the national government enacted Law 22/1999, *Sub-national government*. However, while Law 22/1999 treated villages as extended units of the district governments, established a uniform governing structure for all villages and denied the villages' rights in managing natural resources, Law 6/2014 recognises the diversity of governing structures as a variety of *adat* and *ulayat* rights. This provision is in line with the provision of Law 1/2014 about the rights of local communities in fisheries management. However, the enactment of village regulations is subject to the approval of the district/city governments. This provision enables the government to intervene in customary communities in establishing customary rules for natural resource management.

The main change in pursuing the CTI's goals is the integration of fisheries management according to an ecosystem approach to fisheries management. This goal is incompatible with decentralised fisheries management in Indonesia as specified in Law 22/1999. The national government enacted Law 23/2014, *Sub-national government* that shifted the authority for managing fisheries and marine resources from the district/city governments to the provincial government. The entire marine area from the shore out to 12 nautical miles now falls under the jurisdiction of provincial governments. The law does not recognise the jurisdiction of the district/city governments in marine areas, as was the case previously with Law 22/1999. The national government re-integrated the divided fisheries management, implementing the CTI's goal of an ecosystem approach to fisheries management.

Indonesia committed to achieving the CTI's goals. *The National Plan of Action*

states that the CTI's goal of an ecosystem approach to fisheries management in Indonesia had been implemented prior to the establishment of the CTI through Law 31/2004, *Fisheries*, Law 27/2007 and National Government Regulation 60/2007 (Indonesia National Coordinating Committee of the CTI, 2009). Similarly, Indonesia has established over three million ha of MPAs since the preparation for the CTI establishment in 2007. This led to the declaration of the CTI in 2009 of its commitment to establish twenty million ha of MPAs by 2020. As of July 2017, Indonesia has established nearly eighteen million ha of this commitment (MoMAF, 2017, p.1). This means Indonesia has established over fifteen million ha of MPAs since the declaration of the CTI.

At the implementation level, the national government enacted Decree of MMAF 23/2008, *Organisation and Governing System of the National Management Unit for Marine Protected Areas* (NMU-MPA) to manage established MPAs. This decree established the NMU-MPA's organisational structure, responsibilities, relationships with the national government and geographic jurisdiction (including all MPAs in Eastern Indonesia). However, the decree, which was enacted prior to the establishment of the CTI, does not elaborate on funding sources, decision-making, information provision for and by customary fishers, surveillance or law enforcement, all of which will influence the applicability of CFM in managing large-scale MPAs.

5.6.3 Legislation changes at the provincial level

The Indonesian government at the CTI summit committed to establishing the Sawu Sea MPA (MMAF, 2014a). This MPA covers 4.5 million ha of marine areas in the Sawu Sea in the NTT province (President of Indonesia, 2009a). The MPA is part of the national government's goal to double the size of marine conservation to 20 million ha or 7% of Indonesian economic exclusive zone in 2020 (MMAF, 2014a). The MPA is home to many cross-country migratory fisheries, which justifies the CTI's goal for adopting an ecosystem approach to fisheries management. However, some fishing communities in NTT, such as Lamalera fishers, have relied on these migratory fisheries for food and for exercising their cultural beliefs.

The declaration of the Sawu Sea MPA during the first summit of the CTI was a direct commitment of the Indonesian government to the CTI, but the preparation for its establishment had been undertaken together with the provincial government since 2006. The Governor of NTT issued Decree 190/2006, *Team for Studying and Establishing Marine Protected Areas of Sawu, Solor, Lembata and Alor Sea* to undertake public consultation and prepare planning documents.

Preparation for the establishment of the Sawu Sea MPA required new legislation. In 2007, the provincial government issued Regulation 4/2007, *Management of the Coastal and Marine Environment*. This regulation aims to:

> build a sustainable coastal and marine management … distribute coastal and marine resources for the prosperity of coastal communities, assure the sustainability of the ecosystem and increase the communities' awareness of laws and legislation (Article 3).

This regulation lays a foundation for customary marine conservation and the application of customary communities' rights in the establishment of the Sawu Sea MPA. It recognises:

> The management of particular marine areas with *adat* laws (Article 11), and protection of the rights of *adat* communities to manage coastal and marine areas (Article 24).

Regulation 4/2007 gives power to the MMAF Decree 17/2008 concerning customary marine conservation areas. However, the provincial government did not identify the marine areas in the Sawu Sea that are managed according to *adat*, as regulated by Article 11. As a result, the preparation to establish the MPA attracted resistance from customary whale hunting fishers in Lamalera. These fishers were not involved in the workshops and training related to the establishment of the MPA, which were held in Kupang, the capital city of the province. Thus, in April 2009, their representatives held a meeting with the MMAF. The MMAF agreed to exclude their fishing grounds from the Sawu Sea MPA (Moa, 2009), although the area was not identified as a customary marine area in the Provincial Regulation 4/2007 in order to protect whales that have been hunted by these customary fishers.

The exclusion of the Lamalera whale hunters' area influenced the view of the provincial government. The provincial government had regulated customary marine areas, but it did not explicitly recognise the whale hunting area as a customary marine conservation area, as specified in the Provincial Regulation 1/2011. The governor, in his letter of support for the reservation of the MPA to the MMAF, urged the national government to consider the interests of all parties in the Sawu Sea. Amongst other issues, the governor (2009b, p. 1) highlighted the importance of considering:

3) The interests in the Sawu Sea at local, national and international levels;
4) The dependence of traditional and customary communities on fisheries and marine resources of the Sawu Sea;
5) The dependence of local communities and sub-national governments on fisheries and marine resources of the Sawu Sea.

Following the declaration of the MPA, the Governor issued Decree 180/2009, *Team for Studying, Establishing and Planning of the Management of the Sawu Sea MPA*. The team was commissioned to undertake further consultation and preparation of management plans for the Sawu Sea MPA. This cross-organisation team comprises policy makers from national and provincial governments, experts from local universities, and representatives from the private sector, global, national and local NGOs, including fishers' associations. However, it did not involve customary fishers as required by the MMAF Regulation 30/2010, *Management plan and zoning of* MPAs on the argument of efficiency. There was an inconsistency among regulations across government tiers, as lower-level regulations do not affect higher-level regulations.

A final change that supports the application of customary fisheries was the enactment of the *Provincial Spatial Plan*. Previously, the provincial government established in Regulation 9/2005, *Spatial Plan of NTT Province 2006-2020* that at least 30% of the area (both marine and forest) of each island in the NTT be recognised as protected. This target was planned to be effective until 2020. However, the size of the proposed Sawu Sea MPA itself, as the president declared during the CTI summit (President of Indonesia, 2009a), is about 13% of NTT, but the area encompassed by the MPA's marine zones in islands such as Rote is larger than 30%. Thus, the provincial government revoked this

minimum target for conserved areas in Regulation 1/2011, *Spatial Plan of NTT Province 2010-2030*.

In Regulation 1/2011, the provincial government integrated the Sawu Sea MPA together with its zones for customary fisheries management into the *Plan*. The national and provincial governments agreed to "incorporate the policies and the zoning system of the Sawu Sea MPA in the Provincial Spatial Plan according to the interests of district and city governments" (Sofyanto, 2009, p. 1). The Governor reminded the team to "consider coastal zones for seaweed farming and other aquaculture activities in order to avoid conflicts of interest and strengthen the legal certainty of the businesses" (Sofyanto, 2009, p. 1). This suggests that the provincial government considered fisheries access for customary fishers in the MPA.

The provincial government no longer views fisheries and marine resources as tangible economic assets that need to be commercially harvested as previously practised (see Chapter 4). Instead, in Regulation 1/2011, the provincial government recognised that the Sawu Sea MPA has intrinsic values in terms of "recreation, tourism and cultural practices" (Article 23). However, the Provincial Spatial Plan assumes that the existing rate of fisheries catches is sustainable. The harvesting rate in the Provincial Regulation 1/2014, *Medium Term Development Plan (2013-2018)* was around 34% of the Maximum Sustainable Yield in 2012, while the total size of coastal areas used for seaweed farming was only 10% of all potential areas in 2010 (Government of NTT, 2014, p.II.81). Thus, although the plan supports marine conservation, it also aims for more use of fisheries.

To support the management of the Sawu Sea MPA, the Governor of NTT established the Provincial Conservation Forum based on Decree 74/2013, *Provincial Conservation Forum of NTT province* (Governor of NTT, 2013) . In all districts within the Sawu Sea MPA, the MMAF requires the Provincial Conservation Forum (in Decree 6/2014) to facilitate the establishment of a District Conservation Forum. In 2015, the Mayor of Rote Ndao established the forum (in Decree 273/2014), with a similar structure and function as the

Provincial Conservation Forum, to involve in managing the Sawu Sea MPA in Rote Island.

The most significant change, in relation to this thesis, is the acknowledgement of customary rules for managing fisheries on Rote Island. In 2016, all tiers of government reinstated *hohorok,* or customary rules for managing natural resources*,* in six main fishing villages on Rote Island (Amalo, 2016). *Hohorok* is established within the indigenous zone in the Sawu Sea MPA (see Figure 4.3) and has been designated for customary fishers to manage fisheries according to customary rules practices.

5.6.4 The Sawu Sea Marine Protected Area

MMAF Decree 6/2014, the main regulation managing the Sawu Sea MPA, established the management plan of the Sawu Sea MPA for the following twenty years. This management plan included the geographical marine zones (Figure 4.3), the management bodies, supporting boards and their roles (Figure 5.2), a strategic plan (Figure 5.3), the involvement of local fishers, funding sources and interaction among these bodies and stakeholders. The Minister provided a guideline for the parties to manage the Sawu Sea MPA. However, the MMAF did not clarify the rights of customary fishers in this decree. The provincial government failed to enact laws acknowledging the customary rules and practices in NTT, as stipulated by the Constitutional Court of Indonesia (2012). This lack of clarification influenced the later 2014 decree.

As recommended by the CTI, the management of the Sawu Sea MPA involves the collaboration of several bodies at each tier of government. The management body at the national level is the *National Management Unit for Marine Protected Areas* (NMU-MPA); at the provincial level, it is the *Provincial Conservation Forum*; at the district level it is the *District Conservation Forum* (DCF); and at the Rote Island community level it is as the *Manahoro* (keepers of *Hohorok*) (MMAF, 2014a). The overall organisational framework of the Sawu Sea MPA is shown in Figure 5.2.

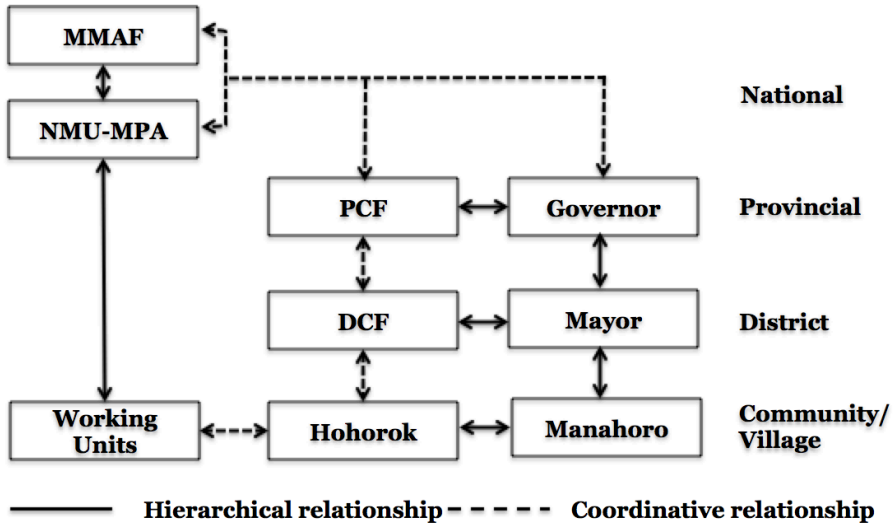

Figure 5.2: The Sawu Sea MPA's management structure
Source: The MMAF (2014, p.252).

As a guide for collaboration in managing MPAs, the MMAF issued Regulation 21/2015, *Partnership in MPAs* that specifies the responsibilities, rights, funding, reports and conflict resolution mechanisms of the various management bodies. In managing the Sawu Sea MPA, these management bodies are guided by the strategic plan (see Figure 6.5) "to achieve sustainable and collaborative management of the Sawu Sea MPA in order to protect marine biodiversity, maintain cultural practices, and increase community prosperity" (MMAF, 2014a, p.223).

This vision shapes the objectives, goals and activities of the Sawu Sea MPA management, which are in line with the *CTI's Regional Plan of Action* and the *Indonesian National Plan of Action*. One of the objectives, for example, is "to strengthen the management of the Sawu Sea MPA based on ecosystem, integrated, participative and collaborative approaches (Figure 5.3), while one goal, among others, is "to revitalise indigenous knowledge and practices for fisheries management". To achieve this goal, the management bodies of the Sawu Sea MPA undertake several activities, such as identifying, strengthening and integrating indigenous knowledge for fisheries management into the management of the Sawu Sea MPA. The application of customary rules and practices in the Sawu Sea MPA is a vital element of collaborative management and maintaining cultural values.

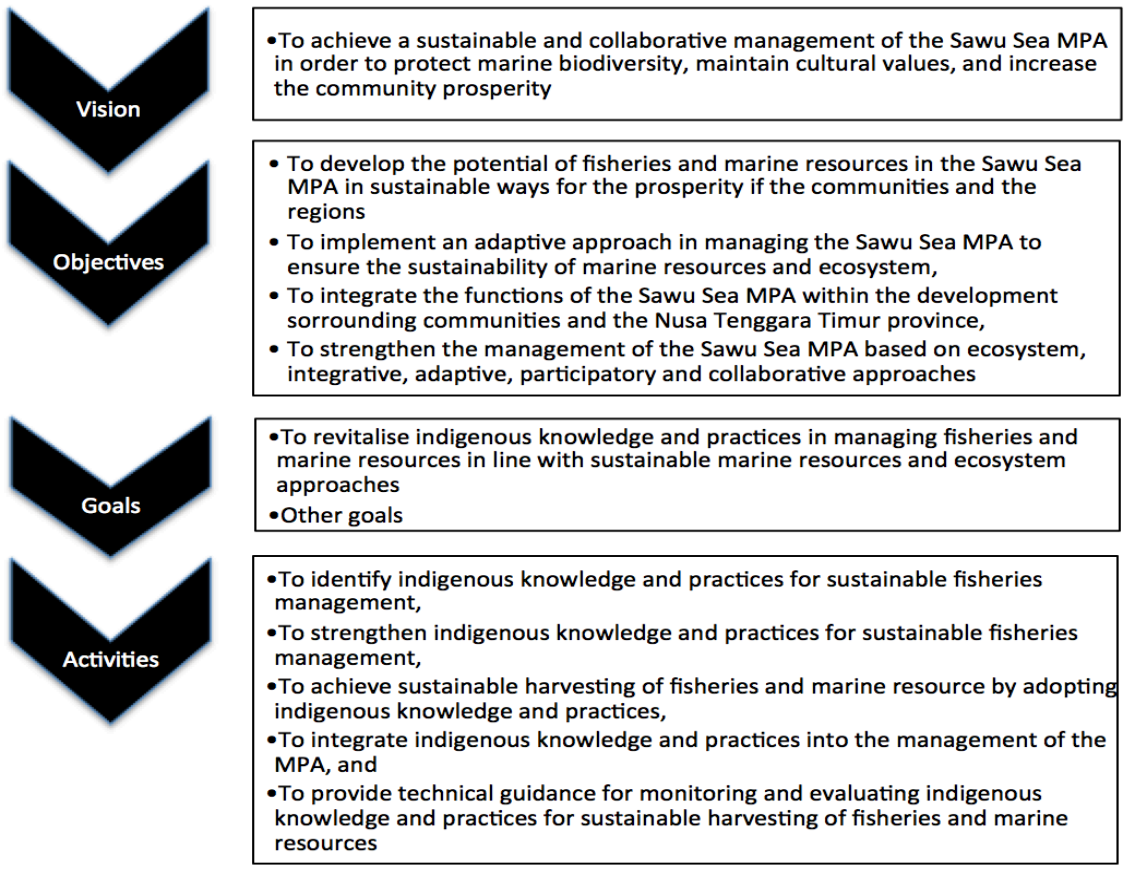

Figure 5.3: Strategic plan of the management of the Sawu Sea MPA.

Source: MMAF (2014, p.223)

5.6.5 Role of international NGOs and donors

Prior to the establishment of the CTI and the Sawu Sea MPA, international NGOs such as TNC and CI were involved in marine conservation in Indonesia. They worked with the support of grants and loans from donors such as the World Bank, JICA, USAid and AUSAid (California Environmental Associates, 2018; WWF, 2017). The NGOs had long been engaged in several projects in the Sawu Sea because it serves as a migratory path of sea mammals, particularly whales; they had also served as brokers [8] or as institutional entrepreneurs [9] in the CTI (Rosen & Olsson, 2013, p. 196). These NGOs have assisted the national and sub-national governments in operating the fisheries and marine

[8] A broker is an actor who mediates transactions (e.g. of money or knowledge) between (at least) two other actors who are not directly connected (Gorris, Glaser, Idrus, & Yusuf, 2019, p. 5).

[9] The concept usually refers to the activities of individuals who leverage resources to create new institutions or transform existing ones within particular problem domains (Rosen & Olsson, 2013, p. 196)

conservation programmes since 1998 (People's Coalition for Just Fisheries, 2013). They worked directly with local fishers, but also through local actors such as local governments, universities and NGOs. The projects included capacity building, community-based management, control and surveillance, research and monitoring, and public awareness for fishing communities (Coral Triangle Initiative Support Program, 2011).

The Nature Conservancy and Conservation International both provided the provincial and district governments in NTT with institutional and financial assistance for the establishment of the Sawu Sea MPA (Provincial Development Planning Agency, 2013). These NGOs actively facilitated scientific studies, workshops and the preparation of management plans for the MPA (Governor of NTT, 2009a). Between 2008 and 2010, for example, TNC spent over €530,000 of grant money on these activities (Hirschmann, 2009) although sometimes, much of the money went to their operational activities (World Conservation Union, 2002). This suggests that the international community's roles and interests influenced the establishment of the MPA's goals and continued to influence their achievement.

The previous involvement of international NGOs and the UN agencies in fisheries conservation in NTT shaped their involvement in the Sawu Sea MPA. The Nature Conservancy, the main NGO in the CTI and the Sawu Sea MPA, for example, was involved in some projects in Indonesia prior to the establishment of the CTI funded through, among others, a debt-through-nature swap for almost three decades (Ministry of Marine Affairs and Fisheries, 2018; U.S. Embassy Jakarta, 2016). In fisheries, TNC has been involved in projects such as monitoring the state of fisheries, fishing vessels, and promoting rights-based management in small fisheries, bringing it to work in Indonesia (Fujita et a., 2018). The revival of *hohorok,* for TNC, was to build local ownership for sustainable fisheries among small-scale fishers (Mahbub, 2016). This rationale is in line with *the Convention on Biological Diversity* signed in Rio de Janeiro in 1992 and 2006 highlighting the sustainability of marine biodiversity and promotion of indigenous conservation practices (Glowka et al. (1994; Zakaria, 2018).

5.6.6 Consultation with affected communities

The provincial government consulted local people regarding the Sawu Sea MPA from the early stages of its establishment. Following the Sawu Sea MPA declaration, the Governor issued Decree 180/2009, *Team for Studying, Establishing and Planning of the Management of the Sawu Sea MPA*. This team undertook two series of consultations. The first round involved participants from 110 villages and it focused on identifying issues such as customary knowledge and practices about fisheries management. In the second round, the provincial government discussed the management plans the MPA with participants in 125 villages.

The involvement of small-scale fishers in decision-making, however, was limited. In their evaluation report, the Team (2014) acknowledged that many key local communities were not involved in the consultation processes prior to the declaration of the MPA. The Team and the Nature Conservancy (2016) confirmed further that nearly 80% of the respondents had not heard about, or knew about, the Sawu Sea MPA. The Team (2014, p. 25) concluded:

> The involvement of local fishing communities in the processes leading up to the establishment of Sawu Sea MPA is simply about informing. They were informed about the management plans and they provided feedback about management plans and zones, but they were not involved in the decision-making processes.

Despite the fact that local people did not have access to decision-making concerning the establishment of the MPA, the national government considered the proposal of the provincial government for incorporating customary fisheries management. After five years of preparation, the MMAF enacted Decree 6/2014, *Development and Zoning Plan of the Sawu Sea MPA and Surrounding Water in NTT 2014-2034,* which was based on the management plans of the Sawu Sea MPA that had been prepared by the provincial government (MMAF, 2014a). The plans applied existing development plans along with the provincial government's priority programmes to recognise the customary fishers' management system in the MPA (Centre for National Marine Parks, 2013). The decree recognised several customary fisheries' management systems, such as *Hohorok* in Rote and *Lilifuk* in Timor as "useful indigenous knowledge for the

conservation efforts in the management of the Sawu Sea Marine Protected Area" (MMAF, 2015, p.59).

The other significant change was the revision of the MPA's size. In Decree 6/2014, MMAF excluded some marine areas around Rote and Sabu Islands to serve as marine transportation zones for both traditional fishers and modern ships. As a result, the size of the Sawu Sea MPA decreased by over 22% after the exclusion of the fishing grounds for Lamalera whale hunters, and decreased another 5% after the exclusion of marine areas around Rote and Sabu Islands (MMAF, 2014a; TNC, 2011).

Overall, there was a lack of public consultation and involvement in decision-making, but the national government considered some fishers' voices. The national government's policy to exclude whale-hunting areas from the Sawu Sea MPA reflects its acknowledgement of customary fishing practice, despite its impacts on endangered species. In this case, the national government prioritised food security over conservation.

5.7 Summary

This chapter shows the changing nature of fisheries management and the application of CFM in Indonesia during the last seven decades. These changes have been shaped by several factors. While economic challenges have long been the main factor shaping fisheries management, decentralised fisheries management has marginalised CFM. These factors influence conservation, where the government at all tiers tended to see itself as the only player, leading to a denial of existing customary conservation practices.

Poverty reduction has particularly shaped the policy of the NTT government, distinguishing its policy from the country as a whole. It aims to reduce poverty due to the abundance of fisheries on the one hand, and a lack of marine-based livelihoods on the other. Thus, decentralised fisheries management enabled sub-national governments in NTT to pursue this goal. However, the provincial

and district governments focused more on empowering local people to benefit from the resources than on empowering customary fishers to manage fisheries.

The CTI establishment in 2009 has led to significant institutional changes and acknowledgement of CFM by the national government in managing large-scale marine environments. The MMAF identified several CFM practices for managing the Sawu Sea MPA, which were re-established in pursuing the CTI's goals. However, the NTT provincial government had passed no law to enable customary communities to manage fisheries within clearly defined geographic areas, as required by the Constitutional Court. The policy of the provincial government is similar to policies prior to the establishment of the CTI. This influences customary fishers' involvement in the establishment of the Sawu Sea MPA, which in turn affects the management of the Sawu Sea MPA. Therefore, Chapter 6 will examine how customary fisheries management is practised by local people on Rote Island and recognised by the national government in managing the Sawu Sea MPA.

Table 5.2: Summary of relevant legislation at the national and provincial levels

Years	National	Provincial
1957	Regulation 64/1957, Devolution of tasks in fisheries and forestry to sub-national government	
1960	Law 5/1960, Agrarian basic principles	
1968	Decree 44/1968, Appointment of the President, the People's Consultative Assembly	
1967	Law 1/1967, Foreign business investment	
1972		Regulation 7/1972, Capture fisheries and withdrawal of marine resources
1974		Regulation 8/1974, Ownership of the Land
1976	Decree of the Agriculture Ministry 607/1976, Fishing capture zones	
1979	Law 5/1979, Village governance	
1980	President issued Decree 39/1980, Abolition of trawlers	
1982	Presidential Decree 85/1982, Use of shrimp nets	
1990	Law 5/1990, Conservation and natural resource and the ecosystem.	
1994	Law 5/1994, Convention on Biological Diversity	Regulation 5/1994, Management of Protected Areas
1999	Law 22/1999, Sub-national government	
	Law 25/1999, Fiscal balance between national and sub-national governments	

Years	National	Provincial
2001		Regulation 13/2001, Examination of Fishing Boats and Regulation 11/2003, Revenues from Fishing Business Permit
2004	Law 31/2004, Fisheries	
	Law 32/2004, Sub-national government	
2006		Governor Decree 190/2006, Team for Studying and Establishing Marine Protected Areas of Sawu, Solor, Lembata and Alor Sea
2007	Law 27/2007, Small island and coastal management	Regulation 4/2007, Management of the Coastal and Marine Environment
	The National Government Regulation 60/2007, Conservation of fisheries	
2008	MMAF Regulation 06/2008, Uses of Trawlers	
	The MMAF Regulation 17/2008, Conservation areas in coastal areas and small islands	
	Decree of MMAF 23/2008, Organisation and Governing System of the National Management Unit for Marine Protected Areas	
2011		Regulation 1/2011, Spatial Plan of NTT Province 2010-2030
2013		Governor Decree 74/2013, Provincial Conservation Forum of NTT province
2014	Law 1/2014, Management of the coastal zone and small islands	
	MMAF Regulation 56/2014, Moratorium of new entrants to capture fisheries businesses in Indonesia	
	MMAF Decree 6/2014, Development and Zoning Plan of the Sawu Sea MPA and Surrounding Water in NTT 2014-2034	
2015	Presidential Regulation 2/2015, Bans of Trawlers and Seine Nets in the Whole Marine Area in Indonesia	
	MMAF Regulation 21/2015, Partnership in MPAs	
2016	President Regulation 44/2016, List of negative investment	

Chapter 6 Customary Fisheries Management on Rote Island

6.1 Introduction

Despite post-1945 changes in Indonesia, the generations-old customary fisheries regime continues. Chapter 4 outlines the fisheries management in Indonesia before and particularly after independence in 1945 at the national and provincial levels within which customary fisheries management on Rote Island is recognised and practised in the Sawu Sea Marine Protected Area. This chapter explains how CFM on Rote Island operates within this framework.

There is limited written information available about both terrestrial and marine fisheries management on Rote Island. This chapter draws on public documents and literature but relies mostly on interviews with government officials, customary public leaders and customary fishers who have knowledge and authority relating to customary natural resource management on Rote Island. Contextual information and CFM are first described, then analysed in regard to: property rights-based management; conformity with Ostrom's (1990) institutional design principles; revitalisation; and opportunities and challenges.

6.2 Rote Island

6.2.1 Geography and Ecology

Rote Island, in the most southern part of the Sawu Sea, shares marine borders with the Timor Sea and Australia to the south, and the Sawu Sea to the north, west and southwest. Its size is 1.214 km^2, the largest island of 107 islands in Rote Ndao district, and one of only eight that are populated. The district has a total landmass of 1.280 km^2 and is mostly flat without hills (Government of Rote Ndao, 2014). Rote Island and the other islands are all officially categorised as small islands as they are less than 2,000 km^2 in area (Government of Indonesia, 2007). These islands share similar ecological characteristics: the land is barren, rocky and dry, and is mostly covered with bushes and savannah because of the

limited period of rain, mostly between November and March (Government of Rote Ndao, 2014).

The coastal areas of Rote Island have different characteristics. The southern coastal areas are rocky with high marine waves, roaring during the dry season between April and November, but some western secluded muddy coastal areas such as in Oetefu, Landu, and Batutua villages are suitable for the marine culture, salt mining and for traditional marine capture using both *deabatur* and shrimp captures (Government of Rote Ndao, 2014). Most eastern coastal areas are compatible for marine culture; particularly seaweed growing since the 2000s, because there are many sounds protecting the areas from waves and other physical matters that can influence the growth of marine resources.

The Rote Ndao district islands have abundant fisheries and marine resources. Marine areas surrounding the island are home to migratory fisheries such as whales and rich underwater marine resources. These marine areas have over 700 ha of coral reef, over 7,000 ha of mangroves and over 1,400 ha of sea grass (Government of Rote Ndao, 2014), but between 30-50% of these marine ecosystems are categorised as severely threatened (MMAF, 2014a). Many of the islands have white sandy beaches, attracting tourists from many countries and being suitable for growing seaweed and salt mining (Government of Rote Ndao, 2014). There are also rocky beaches, which serve as the ecosystem of demersal fish.

Rote island has several lakes from which the islanders get freshwater fish (small size fish such as trout, carp and eel) and water to irrigate paddy fields (Laksono et al., 2018). Dano Tua, just under 2 km^2 in size, situated in the western part in Thie domain, together with Dano Ana lake, served as food sources for many communities in Thie and Dengka domains in the past. Endarwin et al., (2005) identify 20 lakes with similar functions, size and that their water comes only from rainwater. Since 2009, the national government has re-introduced a critically endangered turtle called *Chelodina mccordi rhodin* back to its native habitat in Rote Island. The national government established three lakes as conservation areas in the eastern part of the island: Peto lake in Maubesi, Ledulu lake in Daiama, and Lendo Oen in Daeurendale, Kecamatan Landu

Leko. On average, these lakes are small like those in the western part but because there are many lakes compared to the Island's small population in the past, they have played a limited role in providing food. Increasing human pressure on the lakes, droughts and lack of rainwater in recent years have significantly diminished the roles of these lakes as a source of food (Endarwin et al., 2005).

6.2.2 Rote Island society and economy

Rote Island is small in size, but the people are politically and historically diverse. There are eighteen *Nusak* (self-governing domains representing different clans and dialects) established by the Dutch in a few stages during the colonial period (Fox, 2016). Since the Dutch arrival on Rote in the early 1600s, local rulers had been involved in several deadly conflicts before they made peace with the Dutch allowing them to rule their domains. The recognition started with *nusak* Termanu, Dengka, Bilba and Korbaffo in 1662, Landu, Ringgou, Oepao, Bokai, Loleh, Lelain, Thie and Oenale in 1690, before the Dutch split Ba'a from Lelain in 1700, Diu in 1756, and finally, Lelenuk, Keka and Talae were split from Termanu in 1772 (see Figure 6.1).

Figure 6.1: Map showing *nusak* and dialects in Rote Island

Source: Bureau of Statistics (2018e) and Fox and Grimes (1995)

The diversity of *nusak* results in various differences among them. The farther the *nusak* are from one another, the bigger the differences in the dialect; neighbouring *nusak* tend to share more common dialects (See figure 6.1). Fox and Grimes (1995) classified the language into eight groups with several dialects in each language (See Figure 6.1). However, most *nusak* share similar *adat*, religion and economic activities (Fox, 1977). Up to 93% of the people are indigenous Christians (Protestants). Those who dwell in the eastern part are known as the older kids or "*Lamak anan"* (descendants of *Lamak*) also "*Ledo toda"* (The sunrise), while those in the western part are called "*Hendak anan*" (descendents of *Hendak*) also "*Ledo toda*" (The sunset) (Fox, 1968). Rote is a small island with shared characteristics among *nusak,* but it is also diverse in many aspects.

The graduated recognition of *nusak* influenced charterers of the social and economic characteristics of the people. The Dutch established schools in several *nusak* to educate Rote people (Ministry of Education and Culture, 1977). Thus, *nusak* that were firstly acknowledged gained more benefits from the Dutch than the other *nusak*. Many people in the first group of *nusak* were educated and employed by the Dutch in many other islands, particularly Timor, for various roles such as soldiers (Fox, 2014). As a result, there were many people of these *nusak* that occupied formal jobs in the provincial government and were landowners in Timor, granted by the Dutch. However, there are now more people living in the western part of the island than the eastern part, although the latter is smaller in geographic size than the former (see Figure 6.2).

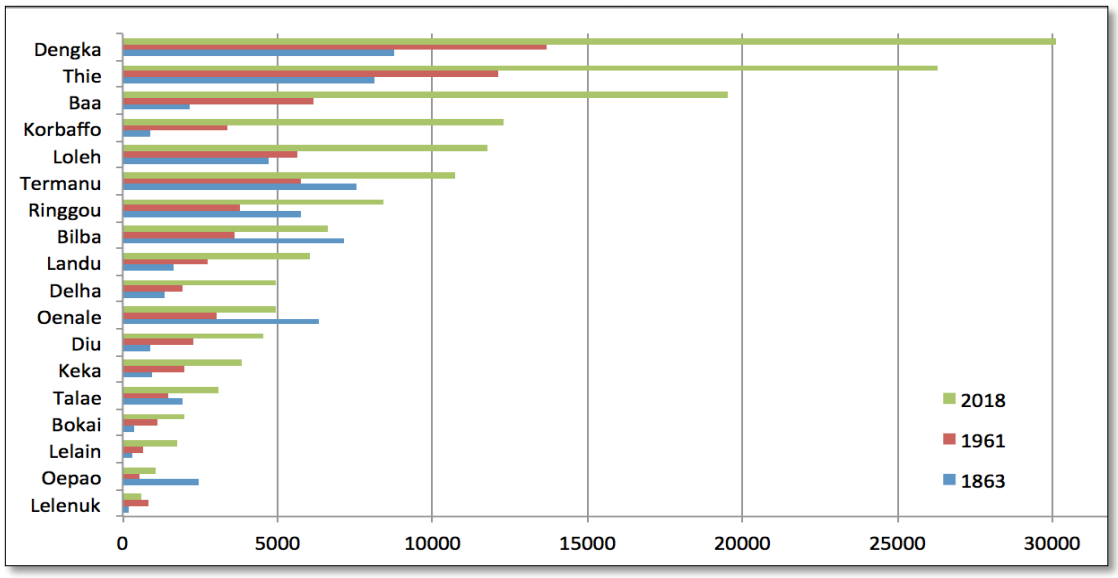

Figure 6.2: Population growth on Rote Island per *Nusak*
Source: Fox (1977) and Bureau of Statistics (2018e)

Despite a high rate of out-migration, Rote population has tripled during the last century. There were 42,000 in 1920 during the Dutch colonial period before the population increased to nearly 160,000 in 2017, growing by over 4% per annum (Bureau of Statistics, 2017; Fox, 1977; Lassa, 2018) (See figure 6.3). Rapid population growth began in 2003 when the national government granted autonomy to Rote and the other surrounding islands, allowing them to exist separately from the Kupang district. The policy created jobs in both formal and informal sectors, encouraging Rote people in other islands to migrate back to Rote Island in just a couple of places, mainly in Ba'a, the capital city.

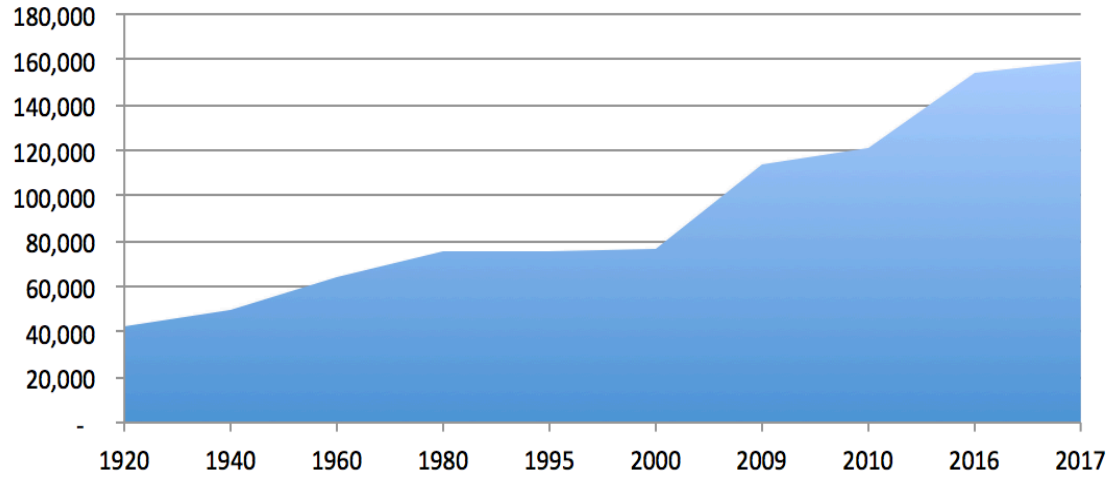

Figure 6.3: Rote population growth (1920-2017)
Source: Bureau of Statistics (2017), Fox (1977) & Lassa (2018)

The economy of Rote Island has been driven mostly by primary sectors such as agriculture, forestry and fisheries, making up to 50% of the gross domestic product (GDP) in 2017, with over 80% of the people living as farmers and fishers (Bureau of Statistics, 2018e). The district government spending contributes over 12% to the GDP. However, nearly all the annual budget (over 96%) of the district government comes from the national government. Local revenue makes up less than 4% of the district government's budget because the national government does not allow the district governments to impose taxes on natural resource extraction activities (Government of Rote Ndao District, 2018). This explains the district government's dependence on the national government to fund development programmes.

Rote Island faces socio-economic challenges similar to the entire NTT province. The livelihoods of the indigenous people were largely associated with livestock raising, sugar harvesting from *Lontar* palm (*Borassus flabellifer*) and dry-land farming (MMAF, 2014a, Fox, 1977). Rote Island is rich in fisheries and marine resources (Government of Rote Ndao, 2014), but there is a lack of marine-based livelihood activities among indigenous people; they mostly undertake subsistence fishing activities along coastal areas. Prior to the 2000s, over 80 thousand Rote Islanders lived in villages, thus, they relied on terrestrial-based livelihoods (Bureau of Statistics, 2000). Only a small number lived along coastal areas and thus being involved in undertaking part-time marine-based livelihoods (MMAF, 2014a). People live in villages and developed inland fisheries on a small-scale as the lakes are small. Some fishers do harvest naturally occurring seaweed and collect shellfish in coastal areas (Governor of NTT, 2002).

Although the island's population only really grew in the last 20 years, changes in the indigenous people's marine livelihoods started to happen in the 1970s and the 1980s. The Bajo [10] fishers' arrival on Rote Island influenced and

[10] Bajo fishers are from an ethnic group that inhabits other parts of eastern Indonesia as well as parts of Malaysia and the Philippines (Nolan & Vincent, 2010). They are well known for their migratory marine culture, enabling them to fish across islands and countries (Nolde, 2009).

strengthened the island's marine-based livelihoods. Initially, they used their vessels to transport sugar produced by Rote Islanders to neighbouring islands, facilitating more indigenous people to be involved in inter-island trades. Bajo fishers subsequently settled on Rote Island, mostly in coastal areas, in the 1980s (Carnegie, 2008; Nolan & Vincent, 2010). They settled mainly in coastal villages, Papela in the eastern coast of Rote and Oelua in the northern coast of western Rote, are the main villages. There are over 130 Bajo families settled in a secluded hamlet called Tanjung Pasir in Papela and up to 7 families in Oelaba in Oelua. However, because up to 10% of them live in their boats and over 30%, particularly adult single men, migrate regularly, their exact number remains unknown. The number of Bajo fishers is under 0.5% compared to the whole population of Rote, but their fishing activities are intensive (full-time) and can range as far as Australia. Initially, they fished mainly for shark fins and sea cucumbers to meet Asian market demand, but in recent years after 2010, many have shifted their fishing activities to meet local market demand after a decline in shark fin prices (Jaiteh et al., 2017). Their fishing activities play some role in meeting the dietary needs of Rote people beyond these villages.

As Bajo fishers started to settle, they started to adopt and influence the island's culture, particularly through intermarriage between Bajo fishers and Rote Islanders. This extended their kin and business networks. Thus, current Bajo fishers are not only capable of speaking the local language but are also adopting local family names. The arrival also gradually changed and increased the number of indigenous people involved in marine-based livelihoods on Rote as they learned and worked with Bajo fishers. The presence of Bajo fishers, together with the district government's policy to provide subsidies for fishers have led to an increase number of fishers; tripling from over 3,500 to 11,000 between 2006 and 2016, while seaweed farmers, mainly indigenous Rote people, increased fivefold from nearly 6,000 to 30,000 during the same period (Marine Affairs and Fisheries Department of Rote Ndao, 2016).

The involvement of indigenous people in fisheries has led to significant economic productivity. Fisheries production increased by over 50% from 2,000 tonnes in 2003 to over 3,000 tonnes in 2014. The biggest change has been in seaweed harvesting, which increased over sevenfold from nearly 2,000 dried

tonnes in 2003 to over 16,000 dried tonnes in 2014 (Department of Marine Affairs and Fisheries, 2015; Government of NTT, 2014). Most these commodities are sent to other islands to be proceed further; there has been no large-scale effort to produce high-quality products from fisheries and marine resources on Rote Island.

Despite these changes, fisheries production is still on a relatively small scale; seaweed farming, for example, is still less than 10% of its existing potential on Rote Island (Department of Marine Affairs and Fisheries, 2015; Government of NTT, 2014). Over half of the fishers on Rote Island live under the poverty line (Marine Affairs and Fisheries Department of Rote Ndao, 2016). Abundant marine resources and fisheries have not been able to solve the high rate of poverty in Rote Island, where up to 28% of the people live under the poverty line (spend less than $2/day) in 2018 (Bureau of Statistics, 2018e).

6.2.3 Governance

For generations, traditional *adat* governance had existed on Rote Island, influenced by *nusak* or former kingdoms (Haning, 2015). The king (known as *Manek*) ruled together with the vice king (*Fetor)*, who in practice did not have real authority. *Manek* and *Fetor* were supposed to support one another like a family, as their names imply; *Manek* represented male characteristics, while *Fetor*[11] represented female characteristics. However, Rote people practiced "*Tou mane* (Male man) and *ina kakana* (Kid female)" [12] principle in a traditional family, meaning that men decided for women because men were the kings, while women were equal to kids (*kakana*). Thus, *fetor* only exercised symbolic power.

Adat governance recognised and practised some limited democracy. In some *nusak*, *manek* was elected and replaced by particular families within the *nusak;* the power was not inherited (Haning, 2015). This might relate to a kings' initial title, which was *Mana lolo bote do mana tada tena,* a shepherd; protecting the people. In *nusak Thie*, for example, *p*rior to the arrival of the Dutch, all *maneleo*

[11] *Fetor* means female sibling
[12] *Tou* means male (adult), similar to *mane* (male) for animal also *manek* (king). Ina means female, while *kakana* means kids

(head of tribes) had the right to elect *manek* from any tribes. *Manek* and *fetor* were not exclusively passed down from one member to another within a family. However, *manek* and *fetor* replacement [13] was the privilege of clans of "*Boru anan;*" [14] these clans exercised legislative power. This succession mechanism of *manek* and *fetor*, and their relationship with *Boru anan* reflected a democratic process, enabling a balance and check relationship among them.

Under *manek* and *fetor*, there were up to nine functional, territorial and clan posts[15] (Haning, 2009, 2010, 2015). In Thie, the officials were 1) *Mane dombe* [16] *(*Attorney*),* 2) *Mane nggero* [17] *(*Judge*),* 3) *Mane leo* [18]*,* 4) *Mane dae langgak* [19] *(*oversaw schedule for land tilt and paddy growing*),* 5) *Mane raraa (*oversaw inspection/guardianship of paddy field*),* 6) *Mane mok (*oversaw fencing of plantations or gardens*),* 7) *Mana helo* [20] *(*oversaw chanting during ceremonies*),* 8) *Mana kila oe* [21] *(*oversaw water distribution*),* 9) *Mane horo* [22] *(*oversaw monitoring and sanctions*).* These officials managed social and natural aspects independently from one another; the power of customary courts, for example, was independent of the other customary positions, and in many aspects, the court was independent from *manek* (Fox, 2007) (see Figure 6.4).

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[13] The replacement was known as *kuku ndara (Kuku* means hoof and *ndara* means horse), which started with *Boru anan* got together, slaughtered a horse and sent one of its front legs without the hoof to the king, implying that the king had lost the people's trust.
[14] *Boru anan* (children of *Boru*) are *Todefeo, Nalefeo, Mesafeo* and *Ndanafeo*
[15] The number of officials varied across *nusak*
[16] *Dombe* means knife
[17] *Nggero* means to divide into two
[18] *Sio* means nine
[19] *Dae* means land also under, *langgak* means head
[20] *Helo* means to chant
[21] *Kila* means distribute, *oe* means water
[22] *Mana* means the one, *horo* means to forbid, also to divide into two

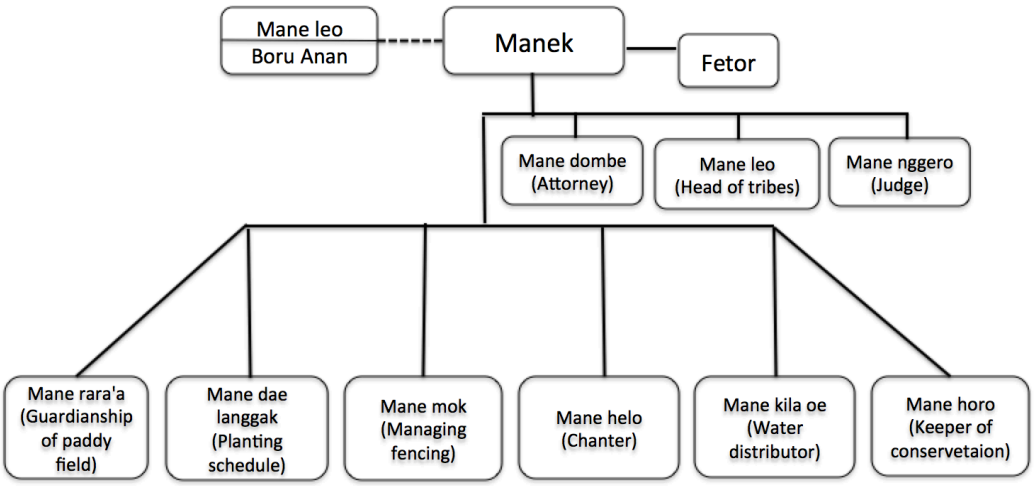


Figure 6.4: *Adat* governance (Example of *Nusak* Thie)
.....: Indirect relationship
_____: Direct relationship
Source: Adapted from Haning (2009, 2010 & 2015)

6.2.4 Post-colonial Adat

Adat experienced significant changes after independence in 1945. The Constitution acknowledged the existence and rights of customary communities, but operational rules do not clarify and support the role of *adat* governance by *nusak*. The role of *adat* continued to decline because the national government introduced a formal and uniform governing system for all communities in Indonesia in 1957 (Antlöv, 2003). The law denied the existence of various roles of *adat* and *nusak*, particularly in enforcing and protecting customary rules and rights in natural resource management (Fox, 2007; Pollock, 2017). As a result, after four decades, the understanding of *adat* among young people had diminished and similarly its practices among elder generations could hardly be found.

The role of *adat* started to improve after the national government introduced its decentralisation policy in 1999. On one hand, decentralisation ended not only centralistic governance but also the hegemony of the culture and people of Java in public policy at the level of local government. On the other hand, it strengthened local and ethnic sentiment and pride. The provincial government, for example, introduced *adat* uniforms, locally hand woven garments, to be worn by government employees during working hours throughout the province and disallowed employees from wearing Javanese factory-made garments

(Pollock, 2017). More extreme changes included establishing new local government units based on ethnic territories, leading to, among other thing, the separation of Rote Island from Kupang District to become a separate district in 2002.

Formal changes to strengthen *adat* were more obvious after the establishment of Rote Ndao district. Under the Kupang district, there were three sub-districts in 1962, before it was divided further into four sub-districts in 1963 and six sub-districts in 1976 (Government of Rote Ndao District, 2013b). After the separation, Rote people not only had their own government and elected their own politicians, but also made their own laws and gradually strengthened *adat*. The number of sub-districts increased to eight in 2005 and then ten in 2011 (Government of Rote Ndao District, 2013b).

The increase in the number of sub-districts reflects a stronger sentiment of *nusak* for identity building. The sub-districts do not have a significant role in public management in Indonesia, but a sub-district comprises several *nusak* and weakens the identity of individual *nusak*. However, because of the small population and territorial size of *nusak* (Government of Rote Ndao District, 2013b), only a few large *nusak*, such as *Thie* and *Dengka*, formed a single independent sub-district, while small *nusak* have been joined to form a sub district (See figure 6.1).

The greater autonomy to the Rote Ndao government has resulted in many other changes, particularly in food policy. In 2010, the Rote Ndao government introduced a policy to encourage local people to once again grow and consume more local food, known as *Lakamola anan sio* [23] such as corn, sorghum, millet, mung bean, sesame and pumpkin (Haning, 2010). The use of such food has diminished among younger people because the national government had for decades paid the salary of civil servants using rice, in addition to cash (McCulloch & Peter Timmer, 2008). Rice is associated more with the culture of Java more than with Rote culture. However, because civil servants are seen as

[23] *Lakamola anan sio* means the nine children of *Lakamola,* the god of food (Ministry of Education and Culture, 1977).

elites in the society, local people started to value rice as more prestigious than other types of food, encouraging its consumption nationally and marginalising local food (Haning, 2010).

6.2.5 Fisheries management

Since its establishment in 2003, the district government has never introduced significant changes in fisheries management influencing customary fisheries management. According to Law 22/1999, the district government had marine jurisdiction within 0-4 nautical miles from the coastline. Within this area, the district government can establish marine conservation. However, the government of Rote Ndao district did not establish any policy to conserve these marine areas. Therefore, fisheries management on Rote Island did not change; customary fishers' access was not constrained.

As a newly established district, however, the district government sought to boost its income. It authorised several laws, particularly Law 34/2004, *Charges for collecting and transporting fisheries and marine resources, which* was imposed on all fishers. However, this law, together with some other similar laws, was later annulled by the national government (Minister of Home Affairs, 2005). The national government's reason was that the law imposed charges on fishing activities, burdening small-scale fishers. However, the national government did not annul laws relating to fisheries businesses and fishing by large-scale fishers (Government of Rote Ndao, 2012). Thus, the district government did not raise revenue from small-scale fishers.

Other tiers of government have shaped the activities of the district government and the achievement of its goals in fisheries management. In District Law 20/2009, *Medium Term Development Plan*, the district government (2009) aimed to increase the fisheries production and improve the sustainability of fisheries, but the law did not explicitly establish particular strategies. It provides subsidies for fishers to facilitate marine fisheries capture and seaweed culture. Initially, it has undertaken these activities as part of supporting the provincial government's programmes and considerable funds have come from both the provincial and national governments. In recent years, there has been a significant increase of budget allocated by the district government to support

the fishers and farmers (Government of Rote Ndao, 2014). This change, however, does not apply to freshwater fisheries because the lakes are insignificant in size and because of drought during the dry season.

6.2.6 Case study villages

Oelua, the main village in this study, was chosen because it is the only village in the western part of Rote where *hohorok* was re-applied. However, at the time of data collection, marine *hohorok* was no longer practised in Oelua, thus data collection was extended to Lalukoen, where freshwater *hohorok* was practised, and to Oetefu village and Ndao island where marine *hohorok* is still practised. These villages are situated in the western part of Rote Island.

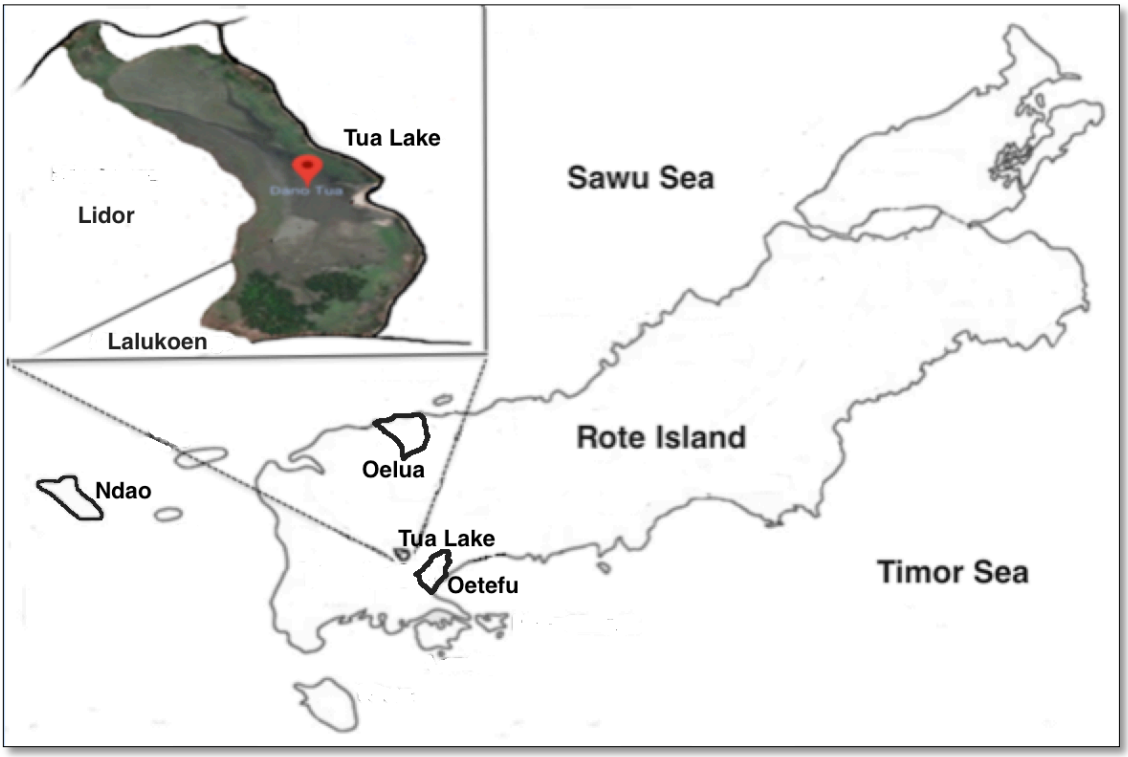


Figure 6.5: The map showing villages of the study and Tua Lake on Rote Island
Source: Google Maps (2017)

Oelua is the largest fishing community of the four villages. Up to 10% of its 3500 population had marine-based livelihoods in 2018 (Bureau of Statistics, 2018d). As elsewhere on Rote Island, palm sugar production, involving extracting and evaporating water from the sap of the sugar palm (*Borassus sp.*) involves up to half of the indigenous people in these villages, with most men extracting sap during the dry season. Both indigenous Rote fishers and non-indigenous fishers

such as Bajo fishers live in Oelua, as well as transient fishers from other islands who come to work in exchange with palm sugar. Most non-indigenous fishers are Muslim. Therefore, the number of fishers in Oelua varies from time to time and is often uncertain. They travel regularly between islands; thus, this study does not include them as indigenous fishers of Rote Island.

The other villages, however, consist mostly of indigenous Rote people who are Christians. Both Lalukoen and Oetefu share the same structure of population and economy; their populations are just under 2000, where 98% of the people are indigenous (Bureau of Statistics, 2018c). Up to half of them work in the palm sugar business, producing over 5 tons of sugar per year (Government of Rote Ndao District, 2013a). They differ in their reliance on fishing. Lalukoen's fisheries are freshwater ones, thus the people do not rely on marine fisheries the whole year. In comparison, the 180 fishers in Oetefu who undertake only marine fishing. The lake in Lalukoen, Dano Tua (see Figure 6.5), is used to irrigate paddy farming, the main activity of the indigenous people in Lalukoen in the rainy season, but it is not the case with Oetefu people.

For decades, Oetefu has been known as a centre for shrimp and salt production. The coast here is suitable for these businesses because they are muddy, sheltered and covered with mangroves, protecting the coast from high waves. Up to 10 families are involved in salt mining in each dry season and over 35 families have relied on catching shrimp, producing over 60 tons of salt and 2 tons of dried shrimp each year (Bureau of Statistics, 2018c). Thus, fisheries are much more important for Oetefu than Lalukoen.

Ndao shares the same pattern of fishing activity as Lalukoen. This small island just off Rote Island, almost 900 ha^2 in size, has over 15% of its 3500 population as fishers with less than 2% of the population being non-indigenous. They only fish during the dry season when the sea is not rough (Bureau of Statistics, 2018a). Over half of the people in Ndao have been growing seaweed for the last decade, but for decades they have been well known for having high skills in local garment weaving and working gold. Their products are made to meet market demand in Rote Island, particularly since the provincial government now

requires government employees to wear locally-woven garments (Grimes, 2012).

The provincial government policy, later replicated by the district government, has had a significant impact on the economic activities of Ndao people. To meet growing market demands, Ndao people, initially men, left the island before the rainy season for other nearby islands to sell the handcrafts. Now, many more women are shifting their weaving activities to Rote Island to get closer to markets (Asdhiana, 2018). There is a shift in Ndao economy from natural resource extraction to home industry.

6.3 *Hohorok* as part of *Adat*

Adat for natural resource management is known as *hohorok* (also *hoholok*) by the people in the western part of Rote Island and as *papadak* by people in the eastern part of the island (Fox, 2014; Hidayat, 2017; Prescott, Riwu, Steenbergen, & Stacey, 2015). In literal terms, *hohorok,* means *the forbidden place or species,* referring to particular terrestrial and marine resources and areas. *Hohorok forbids* community members from accessing particular communally managed resources and areas at certain times and/or using particular methods. The Secretary of the Rote Ndao Forum for *Adat* and Culture (RNFAC) [24] explained:

> It was a traditional practice to manage natural resources and to ensure their benefits for all community members, both current and future. *Hohorok* means forbidden as local people are forbidden from harvesting resources under hohorok. *Hohorok* mainly regulated terrestrial-based resources. *Hohorok* in the sea was implemented along coastal areas and in sounds [eastern and western Rote].

Hohorok applied to almost all types of natural resources. These include terrestrial resources, such as forest, lakes and wildlife, and marine resources such as fisheries, although these were very insignificant. The resources could be owned and managed by the community or privately managed and owned by

[24] Rote Ndao Forum for Adat and Culture (RNFAC) is a coordinative forum involving all customary leaders on Rote Island. It was established in 2014 to re-strengthen adat for development in Rote Ndao district

groups of individuals or even individuals alone. However, accessing and sharing of the resources can be communal; allowing other people to enjoy the resources. According to the Forum Coordinator:

> The resources can range from commonly managed property, such as sounds, forests, terrestrial fisheries and wildlife, to privately owned resources, such as mango trees on private farms belonging to individual people. Forests, for example, that are managed under *hohorok* principles are called *hohorok* forests.

Thus, *hohorok* was a traditional property rights regime, which allocated either group or private rights to residents of Rote. In general, *hohorok* established several complementary rules for managing natural resources. These included access and management rights, a goal to assure a fair distribution of resources amongst community members; enforcement; trials and sanctions.

6.4 *Hohorok* Property Rights Regime in the Past

Hohorok can be analysed using property rights theory. It regulates the rights of communities' members, controls access to natural resources, and enforces the processes and types of sanctions for rule breaking, and the responsibility of the enforcers (Table 6.1). According to the Forum Secretary:

> *Hohorok* regulates many factors. [They include] the type of resources such as water and its location, how, when, where and who can access fisheries, [the process of] monitoring and enforcement, different types of enforcers [such as *manahoro*], and types of sanctions.

Table 6.1: Scope of rules of *hohorok*

Aspect	Definition
Resources	Types (such as forest, fisheries and lakes) and location
Access	Where, how, when, and who can harvest the resources
Enforcement	Processes of enforcement and responsibilities of enforcers
Sanctions	Types and stages

The rules and rights arrangements in *hohorok* have been practised largely unchanged for generations. The lack of change could imply that there have been no significant changes in social aspects, such as population growth, or in ecological aspects, such as the state of the resources. Changes in either of these areas would have required modification to the rules to address the changes. The absence of change is also because *hohorok* did not specify how to make and

under what conditions local people could change the arrangement of these aspects. The Forum Coordinator explained that there is no rule for how to change the rules in *hohorok*:

> However, there was no rule about how to change existing arrangements that *hohorok* had regulated for generations. We practised it as our parents did. We have never changed it.

According to the Forum Coordinator, who echoed the thoughts of the Secretary, the focus of *hohorok* was on managing the community. Its aim was to build the local identity and strengthen solidarity. *Hohorok* was not simply about managing natural resources. The Coordinator added:

> Yes, *hohorok* regulated many aspects of society. *Hohorok* is not only about forbidding access to natural resources and punishing lawbreakers. *Hohorok* is about building the whole community, building collectiveness and solidarity. So, *hohorok* is not about the resources, but it is about the community.

The focus of *hohorok* on social aspects, rather than environmental matters, influences the arrangement regarding control of access for managing natural resources. *Hohorok* did not fully restrict access to resources; it is a partially restricted access to fisheries. It allowed conditional fishing access at all times, but placed controls on the uses of particular fishing methods. This avoided fishery depletion, but at the same time, *hohorok* also considered the community's needs for food.

In addition, *hohorok* took into account the established social relationships between communities. Access to fisheries was open to neighbouring communities. The Tua Lake *manahoro* commented:

> All the people in the communities and neighbouring villages have the same obligation to follow *hohorok* rules and the same right to harvest when *manahoro* lifted the *hohorok*. Artisanal fishers and fishers using fishing rods could access fisheries the whole year. During the open period, fishers could use fishing nets, including from other villages. We allowed them to access fisheries because we depend on one another in many ways.

To ensure law enforcement, *manahoro* enjoyed some benefits and rights to enforce the law and bring transgressors to a customary court. Most *manahoro* have the same rights to access fisheries as the community members, but some enjoyed exclusive access rights to fisheries throughout their lifetime. More

importantly, this position bestowed higher social status within the community. The Tua Lake *manahoro* articulated the rights of *manahoro*:

> Most *manahoro* have all the access rights attached to users, the right to supervise the sites and regulate control of fisheries and bring lawbreakers to the customary court. Some *manahoro* have an exclusive right to access the reserve areas of lakes. The tenure of *manahoro* can vary from one to three years, but sometimes someone can assume *manahoro* for an indefinite time. Therefore, manahoro could enjoy the rights for their whole life.

The allocation of property rights in some marine fisheries *hohorok* differed from those of terrestrial *hohorok*. Most marine fisheries *hohorok* were implemented in *Deabatur*, a fence made of stones or coconut leaves built to trap fish during low tides (see Figure 6.5). Some users in marine fisheries *hohorok* were also owners who had rights to access, manage, exclude, and transfer fisheries. Private parties owned fisheries but this form of *hohorok* had a social aspect; it allowed local fishers to have limited rights to access fisheries without exercising the rights of ownership. A fisher in Oetefu village, whose family was an owner in a marine fishery *hohorok* explained:

> Local fishers established marine *hohorok* in shallow marine areas with limited or no waves. Some areas belonged to certain families, but many of them were open access areas so anyone could manage them. In these areas, groups of local fishers, normally fourteen people, would build and manage a *deabatur*. It was a large v-shaped fence with a small semi-circle-shaped fence attached to the main fence to trap fish. The group of villagers that built and managed the *deabatur* were the owners. They had the right to open and close it, impose entry fees, exclude certain people, preserve, and rent or sell it. There was no prohibition about the arrangement of these property rights in local *adat*.

Figure 6.6: Examples of *Deabatur* (fish trap) on Rote
Source: Yopi Bauana

A shared characteristic of freshwater and marine fisheries *hohorok* is that they considered both ecological and social aspects of fisheries. Freshwater fisheries *hohorok* considered the whole benefits of the water and fish, particularly for irrigation uses. Thus, *manahoro* lifted *hohorok* when the level of water in lakes was low as the result of irrigation uses. Irrigation needs for water was equally as important as people need for fish. It also stressed fair access rights to the resources for community members. Thus, *manahoro* considered the community's need was for an accessible level of water to everyone to harvest fisheries without difficulty. The Tua Lake *manahoro* added:

> We lift the fisheries restriction after the community harvest rice, around July and August [when fish are large enough in size after almost ten months of a closed period]. An early lift would drain the water in the lake for agriculture needs. But, the purpose of lifting *hohorok* after the level of water was low is to enable fair access to fisheries for all people. When the level of water was high, it would be difficult for women and the elderly to catch fish.

Terrestrial fisheries *hohorok* did not recognise an individual quota system that could be transferred to other people or saved for future harvests. The right to access fisheries was only valid during the open period. Beyond this period, fishing was forbidden, but artisanal fishers and users with fishing rods could fish at all times. Therefore, during the open period, people harvested as much

fish as possible. Community members, who did not have access to fisheries when the *hohorok* was lifted, could not claim their rights in the future. The Tua Lake *manahoro* shared the view of the fisher in Oetefu Village that:

> There was no limit to the harvest. Therefore, most people would come in the first few days of the open period of *hohorok*. Everyone had the same right to come, bringing as many family members as possible, and taking as much fish as possible. If any people did not come, they would lose their rights to fish for this period. The open period only lasts for three to six days in a year.

Terrestrial fisheries *hohorok* did not impose limits on the number of fish caught during open periods. However, terrestrial *hohorok* limited the length of the open period as well as the accessible fishing areas for the public. There were non-harvesting areas that served as fishery banks for future needs and, therefore, ensured a sustainable level of fishing. This arrangement of property rights protected fishing stocks for future use. The Tua Lake *manahoro* confirmed:

> There were always some fish left from the harvesting areas, and there were many fish left in the non-harvesting areas. Therefore, we did not worry about replenishing the fish stocks [mostly native fish]. In fact, with this leftover, we could harvest fish in the following years at almost the same amount as the past years.

Marine fisheries *hohorok* did not place limits on the size of harvested fisheries, as is the case in terrestrial fisheries *hohorok*. This was because marine fisheries *hohorok* did not recognise endangered fisheries, which need to be protected, because the sea replenished fisheries and marine resources in a *deabatur* during high tides. Users harvested all fisheries in the designated areas within a *deabatur* when it was opened. The limits were on the areas and the time for harvesting fisheries. It was the owners who harvested fisheries in the reserved areas. Marine fisheries *hohorok* had the same social goal as terrestrial fisheries *hohorok,* but the former did not set different harvest time for the elderly and disable people as the later did. The other difference was that there was no intention to conserve fisheries in a *deabatur,* but because fishing was undertaken only within *deabatur,* thus it did not deplete fisheries in the sea beyond the *deabatur*.

While marine fisheries *hohorok* did not recognise conservation of resources within a *deabatur*, terrestrial *hohorok* established some reserved areas. The closed period in terrestrial *hohorok* could last up to a year; it lasted longer than the period of marine *hohorok*, which lasted from two days to four weeks. On the days when a terrestrial *hohorok* was lifted, fishing tools such as nets were allowed. All community members, regardless of their *Leo* (tribe), could catch fish without paying any fees, but sometimes there were fees imposed for a certain time and purposes. The Tua Lake *manahoro* further explained:

> We believe people could not deplete fish, as there were parts of the lake that cannot be accessed due to its natural characteristics. There were natural caves in the lake, in which fish can hide and the people cannot reach them. In addition, there were forbidden areas to catch fish in the lake. The areas were much deeper than other parts of the lake. They were man-made wells and were owned privately by *maneleo*. These wells served as fish banks to regrow fish in the lake.

The practice of *hohorok* on surrounding small islands such as Ndao differs from that of the *deabatur* on Rote Island. The coastal fishing communities in Ndao still practise *hohorok*, but they do not recognise *deabatur* as practised on Rote Island. They reserve certain coastal marine areas, which serve as feeding grounds for fish, but they allow fishing by artisanal fishers and fishers using fishing rods. Fishing in other marine areas does not have restrictions on the use of fishing nets. A customary public leader in Ndao Island confirmed the arrangement for marine *hohorok*:

> Our *hohorok* differs from marine *hohorok* on the mainland, which allows harvests using nets at certain times. We only regulate fishing methods in the reserved areas. It is legal to use bare hands and fishing rods, but fishing nets and spearfishing are illegal. There are taboo marine areas, where there is no entry without the permission of the *manahoro*. In addition, there is no private ownership. It is a communal resource. Thus, the regulation applies to all members of the community. However, fishers could fish beyond *hohorok* areas using nets.

For terrestrial fisheries *hohorok* on the mainland of Rote, there was a different arrangement in terms of holders' rights and conservation practice from those of coastal marine fisheries *hohorok*. However, there were similarities with *hohorok* in Ndao in assuring the communities' needs for food. The Tua Lake *manahoro* confirmed:

Hohorok was implemented in lakes, forests and farms. These were closed for a year. During this period, artisanal fishers and fishers using fishing rods could access fisheries. This practice enabled small-scale fishers to meet their daily needs for food. It was illegal to use small-sized trawler-type fishing nets, which can remove many fish within a short time of fishing. When it was open, all villagers could harvest fisheries in non-reserved areas.

The variety of practices in *hohorok* for both marine and terrestrial fisheries on Rote and Ndao islands are summarised in Table 6.2. There are differences in terms of resource ownership, fishing methods allowed, and approaches to conservation. A common quality is that all *hohorok* recognised the social function of fisheries, which influenced how fish were distributed within the community regardless of the type of fishery ownership.

Table 6.2: Practices of *hohorok*

		Marine *hohorok* on Rote (*deabatur*)	Terrestrial *hohorok* on Rote	Marine *hohorok* in Ndao
Ownership		Private Limited public access	Public	Public
Closed period	Time Methods Areas	2 days -4 weeks None None	12 months Fishing rods Designated areas	Indefinite Fishing rods All areas
Open period	Time Methods Areas	1 day Artisanal Determined areas	3-6 days Fishing nets Designated areas	Indefinite Fishing rods All areas
Conservation		Not recognised within *deabatur* Recognised beyond *deabatur*	Recognised	Recognised

Overall, both marine and terrestrial fisheries *hohorok* possess several similar characteristics to those found in modern property rights-based management (Table 6.3). Different parties exercise different rights. Users might access fisheries within a certain timeframe, but they would lose the right if they did not exercise it. Their right cannot be transferred to other users nor be secured for future access. This arrangement is similar to the rights of *manahoro*, who had the right to enforce the law and enjoy all the rights of users. However, only owners in coastal marine fisheries *hohorok* could transfer and regulate rights.

Table 6.3: Comparison between modern rights-based resource management and *hohorok* regimes

Characteristic	Modern rights-based resource management	*Hohorok*
Excludability	Recognised (legal)	Recognised
Controlled subtractability	Access limits: Time Methods Areas	Access limits: Time Methods Areas
Goal	To avoid depletion of fisheries	To secure resources for a social purpose
Transferability	Recognised	Limited to local communities
Duration	Decades	Days - months
Security of title	Recognised Individuals	Not recognised Communal

Source: Author

6.5 *Hohorok* and Ostrom's Institutional Design Principles

This section examines the effectiveness of *hohorok* against Ostrom's (1990) design principles for managing common-pool resources. *Hohorok* design principles are discussed below in relation to those of Ostrom's (1990) design principles (explained in Chapter 2).

6.5.1 Small-scale environments and resource users

Most *hohorok* resources are geographically small, mostly situated within a village. Fisheries *hohorok*, for example, cover either a lake (*dano*) or a sound (*tasi bafak*). There are no large-sized lakes or sounds in Rote. The Tua Lake, for example, is approximately 2 km long and 700 m wide (Figure 6.6) and is shared by Lalukoen village on the southern edge of the lake and Lidor village on the northern edge. This small size enables local people to identify the boundaries of the *hohorok* resource.

The small size of environments and the number of users meant that *manahoro* could easily undertake monitoring, and law enforcement. Because a community comprises around fifty families, this small number of users enables community members to communicate face-to-face with one another. Thus, changes in user

activities and fisheries can be monitored with little difficulty. As explained by the Tua Lake *manahoro*:

> In the 1980s, the number of fishers who went fishing every day was small, and they tended to stay static. Everyone knew about everyone: not only his or her activities but also favourite fishing grounds, the number of catches and changes in the fisheries. Thus, we did not have problems patrolling the lake. I could also get information from people living near the lake about fishers' activities. And I could prosecute a lawbreaker a few days after an illegal fishing activity took place. No one could hide from me.

6.5.2 Social-based benefit sharing

In managing fisheries, both marine and terrestrial, *hohorok* considered social aspects of the resources. Most marine fisheries *hohorok* were privately owned and managed by a group of fishers. This ownership was associated with land ownership along coastal areas. However, there was some public access to harvesting fish.

During the open period, non-owners could harvest fish in a designated area within a *deabatur*. Non-owners enjoyed this benefit even though they did not contribute to the cost of managing the fishery, but they helped the owners in catching fish within a *deabatur*. While the non-owners caught fish in the designated areas, they caused the fish to gather in the v-shaped part of a *deabatur,* where the owners had exclusive access. A fisher in Oetefu village explained:

> *The deabatur* was closed to everyone for a certain time. It could be a few days, weeks or months. During this closed period, it was illegal for anyone to fish within the *deabatur*, but when it was open villagers could harvest fish within the outer parts of the *deabatur* with no limit in the ways or amount of harvest. The involvement of the public helped the owners to trap fish within the inner parts of the *deabatur* with little effort. Therefore, the owners always get most of the fish.

Similarly, terrestrial fisheries *hohorok* allocated fish based on social considerations. All community members had the same rights to access fish during the open period. To reduce competition and ensure access for all members of the communities, *manahoro* provided harvest days exclusively for the elderly and physically weak people. This ensured their access to fish regardless of their skills or ability to fish. The Tua Lake *manahoro* confirmed:

> We would shorten the open period if many people joined the harvest and caught a significant amount of fish. We did this to preserve fish for other people, especially the elderly, who would harvest on separate days. This separation enabled everyone to catch sufficient fish for their family.

6.5.3 Traditionally-based rules and participatory changes

Customary communities have practised *hohorok* for generations. Its main elements, such as rules and roles, are the same as they were before 2014. In general, local communities only adapted, they did not fundamentally alter the rules. However, sometimes, the community changed the rules for a short period for particular reasons, such as meeting the collective needs of communities. The Tua Lake *manahoro* asserted:

> We made no change to the rules of *hohorok*. There were no rules about changing the rules of *hohorok*. But, I remember once we had to lift *hohorok* for only a few days, less than a week as it was practised, after noticing that the amount of daily fishing activity involved more fishers, which meant that less fish was left for *hohorok* to be lifted. However, there was no rule specified in advance about this change. We made the change after consulting the elders and members of the communities.

There were some other reasons to modify the rules. In most cases, changes were made in the interests of resources and communities and only applied for a limited period and upon approval of the people. One reason for the change was the increasing number of fishers, which can lead to overfishing, and a second reason was the need for the community to obtain funds for building community-owned infrastructure. This change was never made previously. According to the Tua Lake *manahoro*:

> Since the 1980s, the number of users had increased. Thus, for some years, an entrance fee was imposed on fishing activities in certain parts of the lake with the agreement of the community members. These areas of the lake were seen to have more fish than other parts. The fee also was imposed when the communities needed to raise funds to pay for community needs, such as the construction of churches and irrigation tunnels.

6.5.4 Monitoring and graduated sanctions

Manahoro had the main responsibility for monitoring and enforcing *hohorok* rules. *Manahoro* undertook monitoring daily without difficulty because of the

small size of fisheries and their adjacency to the community's settlement. The Forum Secretary confirmed:

> Monitoring was easy as the size of most *hohorok* resources were small. In *hohorok* fisheries located near community settlements and other public areas, *manahoro* could rely on local people for information about activities of fishers in *hohorok* areas. Thus, lawbreakers could be easily identified.

Interviewees explained that sanctions (*nggero*) varied across *hohorok* resources. *Hohorok* associated with the Tua Lake did not recognise graduated sanctions, but other *hohorok* practices did. Sanctions were imposed on both those who broke *hohorok* for the first time and repeat offenders. Sanctions were adjusted to local contexts and were determined during the declaration of *hohorok*. In most *hohorok* areas, transgressors were required to pay penalties with animals, such as pigs or goats, and rice, which were shared among *manahoro* and community leaders. The Tua Lake *manahoro* commented:

> The type of sanctions and fine amounts imposed on a law-breaker had been specified during the *hohorok's* declaration. We just inherited it without making any changes to it. It [the fine] was equivalent to the value of the animal sacrificed on the day of declaration. This value was applicable to both first-time and repeat offenders. However, to the best of my knowledge, there was never a law-breaker in the Tua Lake during my tenure as *manahoro*. People complied with *hohorok* rules. I am sure that this compliance was because we did not close *hohorok* at all; we allowed people to catch fish using certain tools at all times.

Marine fisheries *hohorok* recognises a graduated sanction. Offenders would be punished according to *adat* with different types of fines, and the infringement fines differed between a first-time and repeat offender. The fine would be shared among customary public leaders and attendants of the court. A customary fisher in Oetefu fishing community explained:

> If someone was found guilty, he or she would be fined but the amount of the fine for the first-time offenders was different from a repeated one. A second time law-breaker, for example, would be fined twice as much as the amount of the fine imposed on a first-time law-breaker.

6.5.5 Customary-based court

Hohorok adopted tribe-based law enforcement with different roles for law enforcers. If there were a case of law breaking, the *manahoro*, who served as the

keeper of *hohorok*, would bring (known as *klak*) offenders of *hohorok* to be tried in an open customary court, which was presided by *manenggero* (see Figure 6.5). According to a customary fisher in Oetefu village:

> Both marine and terrestrial *hohorok* were regulated according to *adat*. Thus, there was an *adat* sanction. Whenever someone broke *hohorok*, the *manahoro* would bring the case to an *adat* court. It would be the *manenggero* who presided over the court to sentence the offenders. The trial was an open process, allowing all villagers to attend and provide testimonies and receive fines paid by an offender.

The time for holding trials differed between a first-time offender and a repeat offender. In most cases, trials for a first-time offender were undertaken in the evening. It was not because the villagers were busy working during the day, but because the court avoided bringing shame to the offender. However, trials for a repeat offender were undertaken during the day and involved more eyewitnesses. This arrangement was meant to avoid unnecessary conflicts involving family members of the offender and to bring more shame to the offender.

6.5.6 Nested institutional arrangement

Hohorok recognises a nested system in its rule provisions, monitoring, trials, and enforcement. *Hohorok* was organised at several nested managerial levels (*manahoro*, *maneleo*, and *manek*) with an autonomous and clearly defined domain of decision-making at each level (Table 6.4). According to the Forum Coordinator:

> *Manahoro* oversaw natural resources management at the lowest level. He managed small size forests, lakes and sounds. *Maneleo* oversaw a wide variety of collective *adat* affairs, along the lifecycle of human and natural resources within a tribe; it can start from birth to the death of the people. And *manek* was the king. There were nineteen *manek* [kings].

Table 6.4: Hierarchical structure of *hohorok* within informal institutions

Level	Position	Informal Institutions	Definition
Resource units	*Manahoro*	*Hohorok*	Specific natural resource management rules and sanctions
Leo/ tribes	*Maneleo*	*Adat*	Customary rules about daily collective activities of the people
Nusak/ Domains	*Manek*	Informal governance	The entire management of informal public affairs

Source: The RNFAC coordinator and *manahoro* of the Tua Lake

This nested system enabled an integrated management of *hohorok* across customary and administrative jurisdictions on Rote Island. In controlling access to fisheries, for example, *manahoro* discussed the open period of *hohorok* across tribes and domains to avoid users overlapping. According to *manahoro* of the Tua Lake, the time for lifting *hohorok* was adjusted to that of Ana Lake, which is situated in Lidor village to the north of Lalukoen village in a different domain (see Figure 6.5). Under the leadership of *manek* and *maneleo*, *manahoro* of these lakes collaborated to discuss the management of these lakes, including the duration of the lifting period. This suggests that *hohorok* recognised a horizontal coordination.

The jurisdiction of *manahoro* over some resources, including the Tua Lake, was across administrative jurisdictions. In the case of the Tua Lake, the *manahoro* explained that while the southern part is situated in the Thie domain under the control of the *Nallefeo* tribe, the northern part is situated in the Dengka domain under the *Elo* tribe's control. However, the lake management was collectively undertaken by *manahoro* of both *leo* and domains. The management did not submit to the authority of either *Manek* Thie or *Manek* Dengka; instead, *manahoro* from both domains managed the lake as a single resource unit. They agreed on similar access methods and the duration of fishing, which enabled them to control both users and fisheries. This suggests that *hohorok* recognised some principles of an ecosystem approach to natural resource management.

6.5.7 Government recognition of *hohorok*

The district government began to become involved in *hohorok* management in the 1980s. The government's intervention originated from the involvement of *manek* in government affairs. The district government appointed *manek* to act on behalf of it in managing some government affairs. There were several *maneleo* who also worked in the district government at the same time. The Tua Lake *manahoro* commented:

> *Hohorok* was independent of the government. The rules about access and management of *hohorok* did not need government support to enforce them.

The independence of *hohorok* can be seen from local people's opposition to sub-national government intervention. Local elites (some *maneleo*), who also worked at the district government, supported the government's plan to commercialise fisheries by applying entrant fees, but local people rejected the idea. An independent researcher of Rote *adat* explained:

> In the 1980s, the district government started to intervene in *hohorok*. It strengthened the rules of *hohorok* fisheries, which were upheld by the *manahoro* and *maneleo*. Later on, the government introduced and managed entrance fees to *hohorok* fisheries. This intervention got support from the *manek*; however, it brought resistance from some members of local communities. Thus, the government revoked the entrance fee.

Manek involvement in the government's affairs strengthened the roles of *manahoro* and *maneleo*. These elites gained government support to enforce *hohorok* rules and secure their privileges as keepers and protectors of *hohorok*. The Forum Coordinator stated:

> *Manek* themselves did not want to lose their power by opposing the sub-national government's policies. They support these government policies because it secured their traditional power. At the same time, the *manek's* involvement provided protection and support for the *manahoro* and *maneleo* to manage *hohorok*.

Overall, *hohorok* conforms to all Ostrom's (1990) institutional design principles. However, some aspects of *hohorok* are not only different from but also absent in the design principles (Table 6.5). The aspects closely relate to the local culture that emphasises social collectiveness and solidarity making *hohorok* different from the practice of community-based natural resource management in western contexts.

The environment units under *hohorok,* for example, are collectively managed. *Hohorok* was used not only for managing marine fisheries, but also for freshwater fisheries and other terrestrial-based natural resources. All natural resources are seen as an integral unit. This approach was influenced by the focus of *hohorok* on people, instead of on resources; *hohorok* adopts an equitable food distribution principle to achieve social solidarity and harmonious principles of relationships among communities. For this reason, *hohorok* did not recognise permanent closure of access to resources and allowed access for neighbouring communities.

The collectiveness characteristics of *hohorok* influence benefit sharing, which can involve several communities in a tribe and across tribes. Sometimes, where a biophysical environment unit stretches across several communities, the management and benefit sharing involved several communities and tribes. The focus of benefit sharing was in the equity, instead of equality as the case with Ostrom's (1990) institutional design principle. This focus on the solidarity was obvious in the sanctions imposed on law-breakers where fines were paid in-kind and shared among community members. The sharing served as a reminder to everyone for the need to obey the law.

Table 6.5: Differences between *hohorok* and Ostrom's (1990) design principles

Aspect	*Hohorok*	Ostrom (1990)
1. Environment units	Collectively managed	Separately managed
2. Spatial scale	Large	Small
3. Boundary definition	Tribe & kinship-based	Community-based
4. Closure of access	Temporary	Permanent
5. Focus	People	Resources
6. Benefit sharing	Equity among community members Collectively-based	Equality between costs and benefits Individually-based
7. Sanctions/ fines	In-kind; shared among community members	Vary across communities

6.6 The marginalisation and revitalisation of *hohorok*

Since independence, several factors have contributed to diminishing the roles of *adat* and *hohorok* on Rote. Increasing the role of the formal government and constitutional denial of customary communities' rights in natural resources management have been the main factors decreasing the role of adat and adat governance (See Chapter 5). Fox (1968) found that changes to the governing system in the twentieth century diminished the role of *adat* governance in many aspects of life, particularly the role of the customary court that enforced rules in *adat* and *hohorok*. This is more obvious since president Soeharto took power in 1967 and introduced a centralised and uniform mode of governance for all customary communities (Antlöv, 2003). He also boosted economic growth through natural resource extraction, leading to privatising tribe-owned resources such as land and forests belonging to customary communities (See Chapter 4). In recent decades, privatisation has been influenced by increasing numbers of migrants and tourists (Kewa Ama, 2011). These people have not only brought different norms and values for managing natural resources, but also are economically better-off and have better access to decision making in natural resource management influencing local norm and culture (Wright & Lewis, 2012). At the same time, many more young people are less interested in *adat* and *hohorok* as they found new opportunities for work, education and travel that rely less on natural resource extraction compared to traditional sectors. These have implications for *adat* and *hohorok* among young generations: decreasing knowledge and awareness about the practice and importance of *hohorok* among young people.

Efforts to revitalise *adat* on Rote Island began in the 1990s, mainly by customary public leaders, such as the Maneleo (tribal chief) in several *Leo* (tribe). Rote Island (at that time part of Kupang district government) did not become involved in the revitalisation of *adat* until 2002, when the Rote Ndao district was established and separated from the Kupang district. The local people elected a mayor who had close connections with and understanding of *adat* and became involved in and supported its revitalisation. The district government mostly focused on supporting ceremonial activities, such as the

declaration of customary rules and the inauguration of the younger generation as *maneleo* and other customary officials. The district government did not establish any law regarding this informal governance and its roles.

The establishment of the Rote Ndao Forum for *Adat* and Culture (Forum) in 2009 assisted the revitalisation of customary rules and practices across Rote Island. This forum involves customary figures, such as *maneleo* across the nineteen former *Nusak* (domains) on Rote Island, in order to establish and pursue its agenda. Its main goal is to strengthen *adat* as was previously practised to manage both community and natural resources. According to the coordinator of the Forum:

> The revitalisation [*adat*] gained momentum across all tribes in the nineteen *Nusak* on Rote Island, after the establishment of the forum in 2009. The forum serves as a communication and learning platform for *maneleo* in revitalising *adat*.

Among other things, *adat* revitalisation sought to halt the depletion of natural resources on Rote Island. The revitalisation of *hohorok,* however, focused mostly on terrestrial-based natural resources, despite an increased depletion of fisheries (see Chapter 5). The Forum Secretary commented:

> In the 1990s and 2000s, customary public figures started the revitalisation of *adat* within their *leo* and then they got support from the district government. The goals were to simplify customary rules and practices [such as sanctions for *adat* breakers, a dowry for marriages and slaughtering of an animal during burial ceremonies] that are financially burdensome and impoverish local communities, and to strengthen the solidarity of local communities in undertaking collective activities and managing common pool resources [forest, spring water, lakes and wildlife].

There was a widespread awareness among customary public figures that *hohorok* could solve environmental problems on Rote, such as destructive farming and fishing practices. The Forum Secretary commented that *leo* are committed to:

> Stopping destructive agricultural practices, such as slashing and burning forest and farms - and fishing practices of blasting and poisoning.

The Forum has gained wide support due to the involvement of customary public leaders at all levels and, more importantly, with the instalment of the Rote Ndao

Mayor as *Maneleo Ina Huk* [25]. This position justified the Mayor's intervention in the management of *adat* and *hohorok*. At the same time, the forum gained access to public policy and management at the district level. The Forum Secretary echoed the view of the Coordinator:

> The Forum itself gained acknowledgement and support from the Rote Ndao government, especially as the forum inaugurated the Rote Ndao Mayor as ex officio *maneleo ina huk*. Thus, organisationally, the forum is embedded in the district government. This structure enables the forum to tap resources and support from the district government in pursuing its goals.

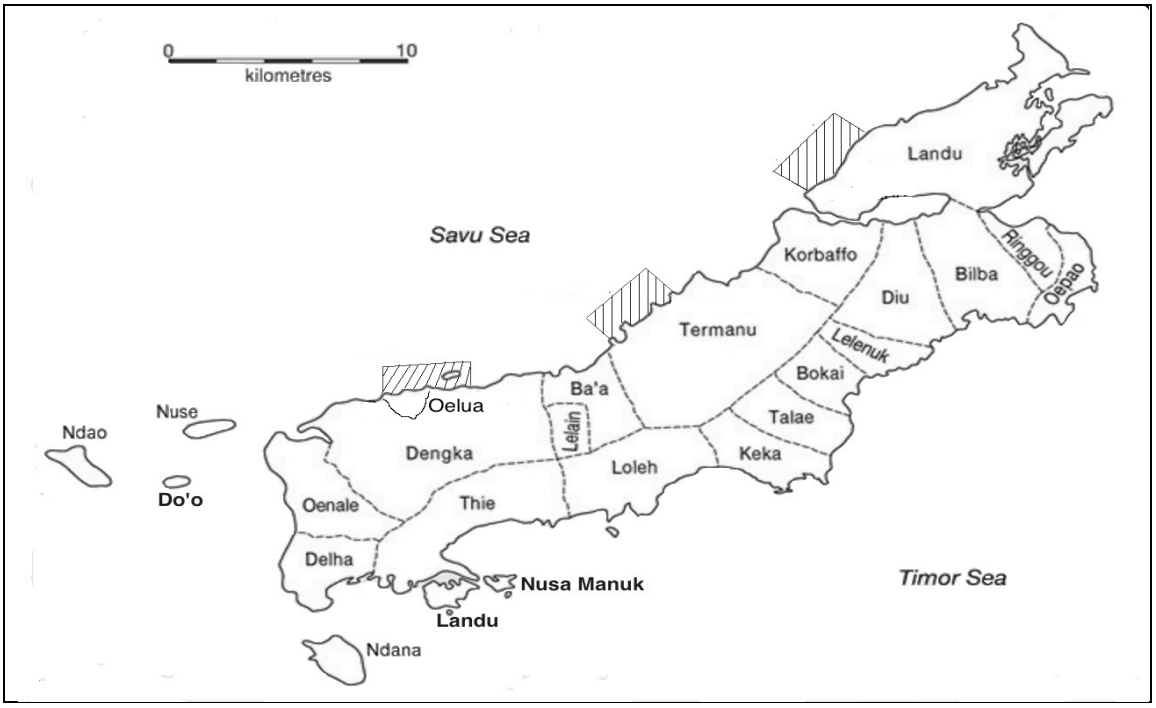
In undertaking *adat* revitalisation, *maneleo ina huk* strengthens the legitimacy of *maneleo* and the programmes of the Forum. There is a close collaboration between customary public figures and the district government involving mutual benefits. The Head of the Natural Resource Management Bureau stated:

> The Mayor supported the revitalisation because the revitalisation strengthened the district government policy of poverty reduction and law enforcement. The district government's involvement also strengthened the legitimacy of the Mayor as the *maneleo ina huk*.

The establishment of the Sawu Sea MPA on Rote Island, in 2009, influenced the revitalisation of *hohorok* for managing fisheries and marine resources. After a period of planning, the provincial and district governments, together with the Forum, re-implemented *hohorok* for fisheries management in September 2016. The district government has implemented *hohorok* in marine areas in six villages (see Figures 6.7) across Rote Island, because these villages are the main fishing communities on Rote Island (Amalo, 2016). The Head of the Natural Resource Management Bureau explained:

> With the help of the provincial government and forum, we [the district government] have been involved in *hohorok* revitalisation. In September 2016, we implemented *hohorok* in six villages. We have set the target to establish *hohorok* in all fifty-eight coastal villages on Rote Island.

[25] Literally, this means the mother of Maneleo, the highest position in customary governance.



..... Domain boundary  *Hohorok*

Figure 6.7: Map showing areas where *hohorok* was established in six villages in 2016 and the eighteen domains on Rote Island.
Source: Interview with the Coordinator of the Forum and Fox (2017, p. 236)

Figure 6.8: *Hohorok* declaration and *manahoro* inauguration in Rote Island in 2016
Source: Dantje Ndoen

Figure 6.9: Symbolic release of turtles to the sea by members of the provincial and district conservation forums in 2016

Source: Dantje Ndoen

Several factors led to the development of initiatives to revitalise *hohorok* and its implementation in marine areas. Customary public leaders and fishers acknowledged the impact of marine resource depletion on both local livelihoods and the conflicts between small-scale fishers with outside large fishers, which were due to the destructive fishing techniques depleting the fisheries. The Forum Secretary explained these problems:

> Increasing human pressure and destructive fishing by non-local fishers have been our main concerns, but there was nothing we could do. Fisheries depletion [caused by illegal fishing by outside fishers] brought conflicts within local communities and threatened fishers' livelihoods [some local people work for outside fishers]. We used to catch from fisheries along the coastal areas. Now, a much greater effort is needed to catch fish and other marine species than in the past.

Under *hohorok*, local communities are entitled to manage fisheries and other marine resources according to local rules and practices. Communities agree on a list of prohibited activities; allowable fishing methods and the amount offenders will be fined. In most cases, the amount of the fine can be as much as IRP.

10.000.000 (see Table 6.6), which is equivalent to a six-month salary of the monthly minimum pay in Rote Ndao district.

The rules of *hohorok* were declared during the establishment of *hohorok* and disseminated across communities through written and oral communication (see Figures 6 8 and 6.9). However, there are some exceptions to the rules, which take the livelihoods of local communities into consideration. Sand mining, for example, is allowed when it is taken using traditional methods on a small-scale to meet basic needs, such as food. Some *manahoro* elaborated on the rules and the exceptions:

> Local communities can take dry mangrove as firewood, but not on a large-scale. In the past, we cut these trees to build boats and ships. Now, we realise that the lungs of the earth are in these trees. Also, we learned that the forest serves as the ecosystem for fisheries (Coordinator *manahoro* at the former Dengka kingdom).
>
> It is also the case with sand mining. Local communities can take sand using traditional mining methods. It takes a long time and a lot of effort to collect and carry the sand to the designated place. So, few people mine the sand. It is illegal to mine the sand with modern equipment and/or for profit (A *manahoro* in Oelua village).

Table 6.6: List of forbidden activities and fines

Activities	**Fines (IRP)**
Mangrove logging	10,000,000
Monkey hunting	10,000,000
Honey harvesting using smoke and fire	10,000,000
Poison fishing of lobsters and sea cucumbers	10,000,000
Fishing methods:	
- Blasts	10,000,000
- Poisons	10,000,000
- Trawling	10,000,000
Destroying coral reefs	10,000,000
Large-scale sand mining using modern equipment	10,000,000
Taking sea turtles and their eggs	5,000,000
Sailing within marine culture areas	2,500,000
Littering the sea	1,000,000
Repeated violations are tried according to legal laws, in addition to these fines	

Source: Information board on Oelua village (Figure 6.10)

The main difference between contemporary *hohorok* rules and earlier practices of *hohorok* is that while the modern rules are written, there is no written rule about future harvests of protected marine species. Previously, for both terrestrial and marine-based resources, there were unwritten rules for renewed harvesting of the protected resources; fisheries access was only closed long enough for fisheries to improve. There was no total closure of fisheries access for an indefinite period. This practice is not fully applied in current *hohorok* rules in the Sawu Sea MPA, as the government does not clarify the temporal closure practice in the current written rules. *Manahoro* in Oelua explained the reason for this absence and a consideration for future changes of rules:

> We have not discussed future harvest, but as we have practised in terrestrial *hohorok*, there is always 'room' for discussion. We always consider the economic needs of the communities [during difficult and festive seasons]. But, harvesting other resources using environmentally friendly methods is allowable at all times.

Figure 6.10: An information board showing *hohorok* rules and fines
Source: Adolfus Abe

Figure 6.11: Signpost showing *papadak* boundary on the beach.
Source: Dantje Ndoen

Manahoro undertook a series of discussions with fishers in Oelua prior to the establishment of *hohorok*, but some participants interviewed in this research were not aware of the lack of regulations about future harvests. Indigenous fishers knew about the practice of lifting the access ban to fisheries for some days to allow local fishers to harvest resources. However, some fishers, including non-indigenous fishers who undertake intensive fishing activities, were unaware of this practice in the past and did not know if it should be applied in Oelua's marine *hohorok*. A non-indigenous fisher confirmed:

> I knew that in *hohorok*, there is a time for no harvest but after a while, the ban will be lifted ... I did not know that the current practice is different... but at the moment we support it [*hohorok*]. Perhaps we can discuss this practice in the future when the resources have been restored. After all, the resources are for us, not for being watched only.

6.7 Opportunities and Challenges of *Hohorok*

The involvement of different tiers of government in revitalising *hohorok* for fisheries and marine resource management creates opportunities for further strengthening of *hohorok*. As the Head of Economic Bureau at Rote Ndao district confirmed, the district government, would establish *hohorok* in all fifty-eight coastal villages. Marine *hohorok* have been established in six villages in 2016 and in another sixteen villages in 2017. The establishment was in line with national regulations and was undertaken with institutional and funding support from all tiers of government and non-government organisations.

The establishment of Regulation 60/2014 and Regulation 8/2016, *Source of Funding for Villages from the National Government* created further opportunities for customary communities to fund natural resource management. In these regulations, as a follow-up to Law 6/2014, *Villages,* for the first time in the country's history, the national government specified the sources and amount of budget allocated to all villages in Indonesia from the budget of all tiers of government. These regulations have led to an increased budget, for all villages, of up to 20% annually since 2015, from an average Rp. 800 million in 2015 to over Rp. 1.1 billion in 2016 and over Rp. 1.3 billion in 2017 (Ministry of Finance, 2017, p. 2).

The budget allocated for villages, according to Regulation 60/2014, is based on the size of the population, the geographical size of the village and the level of poverty. This regulation does not include the size of marine areas under *hohorok*. Similarly, the size of forests in each village, which are managed by customary communities, does not alter the budget allocated to the village. The national government has been under pressure from provincial and district governments to include these criteria in the budget allocation decision process since 2012, but the national government failed to do this in the revised Law 23/2014, *Sub-national government*. Thus, in the 2017 village document budget for Rote Ndao district, no village allocated a budget to customary communities for managing natural resources. The Secretary of Fisheries and Marine Affairs Department in Rote Ndao district confirmed that:

> Unless the government [either national or provincial or district] regulates the budget allocation at village level, village governments are under no obligation to allocate village budget to *manahoro* for managing *hohorok*. Similarly, customary fishers no longer voluntarily provide resources for *manahoro* to undertake their responsibility. Thus, *manahoro* undertake their responsibility at their own cost and there is no certainty about future benefits for them.

Increasing challenges to *hohorok* arise from the inability of *manahoro* to undertake their responsibilities and enforce the law, due to lack of incentives. According to the Secretary of the Fisheries and Marine Affairs Department, in the past, being *manahoro* meant a person had a higher social status with privileges that were not enjoyed by other community members. These benefits served as incentives for *manahoro*. However, the Secretary of the Fisheries and Marine Affairs Department added that being *manahoro* these days is no longer a privilege. The Tua Lake *manahoro* partly agreed with this view as he commented:

> It is true that in the past, *manahoro* was a crucial position and I was proud to be one. I think people of my generation are willing and proud of being *manahoro*. Their main interest is in seeing our tradition, culture and practices are preserved. However, it will be difficult to expect the same interest of young people. They prefer doing jobs that can give them instant cash.

Challenges from privatising natural resources at the community level have also increased rapidly. Tribe-based resources such as land, forests and lakes have experienced significant changes from increased use, due to the increasing market demand and privatisation of land and other resources. National media have highlighted the expansion of tourism-based economies including hotel and villa construction in coastal areas, which have led to increased purchase of land by foreign entrepreneurs on Rote island (Kewa Ama, 2011). Marine-based tourism activities along the beaches have contributed to increased pollution of fisheries and seaweed farming in some areas that are managed under *hohorok*.

The increased growth of population has increased the pressures on the island's natural resources. The number of people in Lalukoen village, for example, where the Tua Lake is situated was just under 2,000, in 2017, but most of these people were born in the village and up to 30% live under the poverty line.

Population growth has led to an increasing number of houses with greater land occupancy for various private uses (Bureau of Statistics, 2017). There were 440 houses in Lalukoen village in 2016 (Bureau of Statistics, 2017). The increased area of land used for agriculture has naturally led to increased water abstraction from the Tua Lake, which in turn poses a threat to *hohorok* fisheries in the lake. According to Tua Lake *manahoro*, the increased population is the main contributor to the conversion of land for houses and farms around the lake. Thus, the growing population is an internal challenge to the effectiveness of community-based economies under *hohorok*.

6.8 Summary

Most *hohorok* recognise communal rights-based resource management. There was a few *hohorok* that jointly practised both communal and private rights-based management. There were different property rights, some of which were unique to the roles of parties in *hohorok*. However, users had limited rights, which could not be secured for the future, nor transferred to other users beyond local communities. *Hohorok* recognised transferability, as modern rights-based resource management does, but it was limited in both spatial and temporal scale.

Fisheries conservation was not a major focus of *hohorok*. Terrestrial *hohorok* sets limits on methods, time and areas for accessing fisheries, as does modern rights-based resource management. During the open period, *hohorok* adjusted the duration of the period to avoid depletion, while taking into account the number of catches and the number of fishers. This conservation enabled local communities to meet their need for food with equally shared fisheries. *Hohorok* recognised no-entry zones, which were meant to conserve fisheries. However, such limits on fisheries access was not recognised in the marine *hohorok*. It had no-entry zones for users, but as privately-owned resources, owners could harvest in the no-entry zones.

The Rote Island regime shows that the applicability of *hohorok* to managing natural resources reflects the characteristics of the resource. The *hohorok*

environments are small with a few users, which enabled *manahoro* to monitor the resources. In keeping up with changes, *hohorok* developed different practices for accessing resources to avoid resource depletion and to address a fair resource distribution among community members. More importantly, *hohorok* resources are managed according to Ostrom's (1990) nested institutional arrangement, which enabled *manahoro* to manage fisheries under different levels of authoritative territories (domains).

However, *hohorok* faces several challenges influencing its present effectiveness. Internal challenges to terrestrial fisheries relate to increasing privatisation of natural resources, such as clearing of land and forest for settlement and farming, and the harvesting of fresh water. The main driver is the growing number of local people. External challenges are associated with the increasing conversion of the coastal zone for tourism-based economies, which influence fisheries through pollution and the diminishing marine resources in the ecosystem.

Challenges to implementing of *hohorok* in marine fisheries are equally significant. *Hohorok* characteristics, for example, can be used for managing large-scale marine environments in a nested system. However, recognition of rights does not enable transfers of rights across communities. Similarly, the clearly defined boundary of users and environments was possible when *hohorok* was applied to small-scale marine environments, such as sounds. In large-scale marine-based fisheries, the characteristics of users, resources and the environment differ from those of small-scale *hohorok* resources. Therefore, the next chapter examines how and to what extent *hohorok* has been adopted and revised to suit the characteristics of large-scale marine-based fisheries.

Chapter 7 Fisheries Management in the Sawu Sea Marine Protected Area

7.1 Introduction

The 2009 Coral Triangle Initiative (CTI) both crystallised and juxtaposed the range of formalised management at the national, provincial and district levels and in different Customary Fisheries Managements (CFM) within the Sawu Sea Marine Protected Area (MPA). This chapter frames these arrangements, which shape the applicability of CFM across management bodies in the Sawu Sea MPA, using the Institutional Analysis and Design (IAD) framework.

It draws on a thematic analysis of documents and interviews with participants from all management bodies of the Sawu Sea MPA identified in the institutional interaction framework. The management bodies are: The National Management Unit of Marine Protected Areas (NMU-MPAs); Nusa Tenggara Timur (NTT) Provincial Conservation Forum; Rote Ndao District Conservation Forum; and *Manahoro* in Oelua Village (see Figure 5.2).

The key themes are covered in sections as follows:

1) 'Roles and selection processes of participants' looks at the organisational functions of the management bodies and representatives of customary fishers, their selection and termination processes;
2) 'Resource structure' explores the incentives and disincentives that shape the actions and support of stakeholders and customary fishers;
3) 'Decision-making' considers the extent of control the fishers and/or their representatives can exercise to voice their practices and rules in the fisheries management;
4) 'Information provision' examines the provision of and fishers' access to information about conservation progress, the performance of management and the roles of customary fishers in information provision;
5) 'Surveillance and law enforcement' looks at the commitments, mechanisms, opportunities and challenges involved in enforcing the law and the roles of customary fishers in law enforcement

6) 'Jurisdictional scope' describes the extent and challenges of the management bodies in managing fisheries across geographical domains.

7.2 Roles and selection process of the participants

This section sets out the roles of the participants who undertake the organisational functions of the management bodies, customary fishers' representatives, and evaluates their strengths. It also describes their selection and termination processes. While the roles of customary fishers' representatives vary from insignificant roles at the national level management body to strong roles at the community level, the roles of the management body at the community level are weaker than those of higher-level management bodies.

At the national level, Decree 6/2014 established that the responsibility of the NMU-MPA is to administer, implement and supervise national MPAs with a focus on fisheries conservation, according to existing laws and regulations. However, the responsibility of the NMU-MPA in managing the Sawu Sea MPA is limited to implementing regulations of the Minister of Marine Affairs and Fisheries (MMAF); the NMU-MPA cannot make regulations.

According to Decree 6/2014, the functions of the NMU-MPA are to:

- prepare planning documents for the administration, implementation and supervision of national MPAs
- increase empowerment and awareness of communities in and around national MPAs
- provide secretarial, human resources and financial support.

However, these functions of the NMU-MPA reveal a gap in the policies regarding the role of customary fishing communities in managing MPAs. For example, the Decree does not specify how the revitalisation of customary fisheries in the Sawu Sea MPA should occur, as determined in the Strategic plan (Figure 5.3). These functions require the appointment of officials to occupy supporting units designed to build relationships with fishers and identify indigenous knowledge. However, posts such as fisheries' consultants were, therefore, unoccupied. An NMU-MPA staff planner confirmed that the positions

have been vacant since the establishment of the MPA, but that this created no significant difficulties, stating:

> It is true that there are several posts, such as planners and analysts, which are vacant. No employee has been recruited for [to assume] these posts, but we do not have many problems because of this lack.

The NMU-MPA worked closely with other organisations to compensate for the lack of staff members. When asked about customary fisheries expertise in the NMU-MPA, the NMU-MPA coordinator responded:

> We do not work in isolation from other stakeholders … We work with the sub-national governments, customary institutions [such as Rote Ndao Forum for Adat and Culture (RNFAC)], NGOs, and local universities. Because no one has complete knowledge, we need to work together and tap the knowledge and other resources from other stakeholders. It helps us to cope with the lack of resources.

This absence of officials in the NMU-MPA to undertake activities related to identifying and strengthening customary fisheries, as required by the Strategic plan, suggests that MMAF does not see the function as significant. Nevertheless, the NMU-MPA coordinator argued that the absence does not mean that the NMU-MPA does not undertake the activities. The NMU-MPA works with other organisations to undertake the activities.

However, there is no established partnership between the NMU-MPA and customary fishers. In MMAF Regulation 21/215, *Partnerships in Managing MPA,* MMAF (2015) requires the NMU-MPA to establish partnerships with sub-national government agencies, NGOs and local communities. The regulation requires NMU-MPA to clarify the rights, responsibilities, funding support and the timeline in the partnership, but this was a general regulation rather than one specifically for the Sawu Sea MPA. Decree 6/2014, which established the Sawu Sea MPA, did not specify this partnership requirement. As a result, the NMU-MPA did not establish the partnership and its involvement of customary fishers remains general.

Despite the lack of some officials, the NMU-MPA did have an official at the district level to facilitate operational activities. MMAF established in Decree 23/2008 that "the management unit [NMU-MPA] of MPAs can establish working units [at the district/city level], taking into account its workload"

(Article 16). There are ten districts in the Sawu Sea MPA encompassing five islands with varied ecological and social challenges. Thus, these officials could facilitate customary fishers' voices to shape the management of the Sawu Sea MPA. Decree 23/2008, however, did not specify the responsibilities of the working units nor their relationships with district/city governments and customary fishers. The decree focused on administrative activities for establishing the Sawu Sea MPA, rather than empowering customary fishers and thus, these official positions were terminated after the establishment of the Sawu Sea MPA.

The roles of the NMU-MPAs differ from those of the Provincial Conservation Forum, as stated in Governor Decree 74/2013 and MMAF Decree 6/2014. While the former emphasises building local communities' involvement in the management of the Sawu Sea MPA, the latter focuses on incorporating the voices of the sub-national governments (see Table 7.1 below). Not one out of the eight responsibilities of the forum established by the MMAF is about supporting customary fishers to manage fisheries. On the other hand, four out of fourteen responsibilities of the forum established by the Governor are about strengthening local stakeholders and communities in managing the Sawu Sea MPA. The similarity between these decrees is that neither one refers to customary fishers or small-scale fishers.

Table 7.1: The responsibilities of the Provincial Conservation Forum

Themes	MMAF Decree 6/2014	Governor Decree 74/2013
Roles and selection	▪ To facilitate and support the national government policies related to the management of the Sawu Sea MPA	▪ To undertake a variety of activities related to the management of MPAs ▪ To support management of MPAs ▪ To strengthen the capacities of stakeholders in managing MPAs
Resource structure	▪ To provide assistance to the NMU-MPA in planning programmes and projects, advocating for funds and strengthening partnerships	▪ To seek funding to implement its programmes
Decision-making	▪ To provide feedback to the government at the national, provincial and district levels in supporting management of the Sawu Sea MPA ▪ To apply the voices of sub-national government in implementing management plans and planning programmes and projects	▪ To provide feedback and submission to the government at all tiers and the management authority of the MPAs
Information provision	▪ To provide assistance to sub-national government in monitoring and evaluating the management of the Sawu Sea MPA ▪ To provide feedback to the NMU-MPA in managing the Sawu Sea MPA	▪ To assist sub-national governments in undertaking monitoring and evaluation of MPAs ▪ To facilitate the participation of local people in managing MPAs ▪ To facilitate and undertake public consultation in order to apply the voices of involved parties in the management of MPAs ▪ To undertake research and development to support the management of MPAs ▪ To facilitate and/or undertake educative programmes for local communities in managing the MPAs
Surveillance and law enforcement	▪ None	▪ None
Jurisdictional scope	▪ To coordinate cross-sectoral programmes in supporting the Sawu Sea MPA ▪ To undertake coordination activities regularly	▪ To facilitate and/or undertake coordinative and collaborative activities ▪ To support policies of the government at all tiers in managing MPAs ▪ To establish district conservation forums ▪ To strengthen the managerial and institutional capacities of district conservation forums

Source: MMAF (2014) and Governor of NTT (2013)

The absence of a reference to customary fishers does not allow them to be involved in the forum. Decree 74/2013 established the 23 members of the forum's board (Figure 7.1) and an executive (Figure 7.2) made up of high-

ranking officials from diverse organisations. Eighteen members of the board are from national and provincial government organisations, with four members from local universities, one representing a hotel and travel agency association and one member acting on behalf of the provincial fisher association. However, there is no representation from customary fishers, and most of the members are representatives of government organisations. The provincial government allows customary fishers to shape decision-making in the forum.

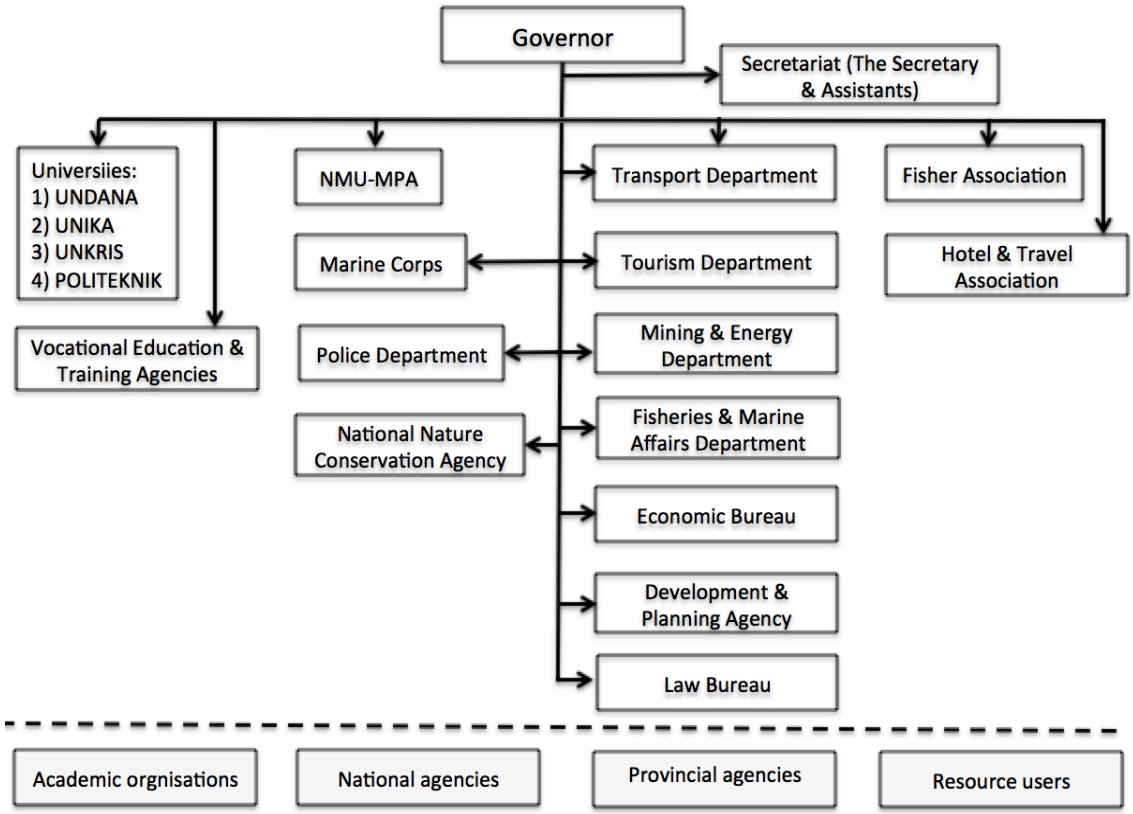


Figure 7.1: The Provincial Conservation Forum's board members
Source: Governor of NTT (2013)

The roles of board members are limited because there is no guidance for their selection, allowing them to negotiate with the provincial government. The Governor appointed the current board's members and the executive body in 2013, before MAAF issued Decree 6/2014. The decree specifies the forum's responsibilities but provides no guidance about the eligibility and tenure of the board members. Thus, the board members' appointment and authority are at the Governor's discretion.

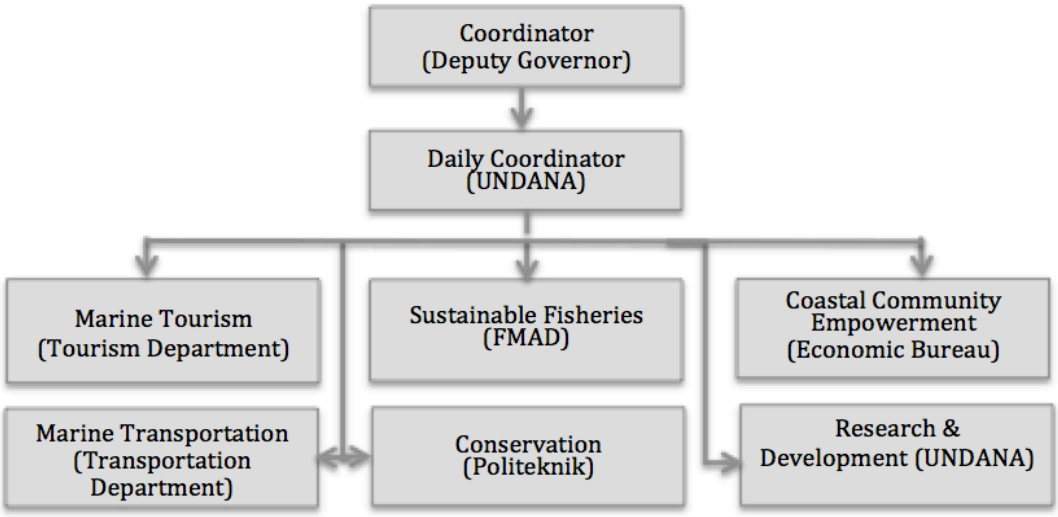


Figure 7.2: The Provincial Conservation Forum's executive unit

Source: Governor of NTT (2013)

The board members comprise the heads of the agencies or organisations that have knowledge, capacity and responsibility related to the Sawu Sea MPA. According to a former senior Tourism Department official, some board members have been involved in the preparation and establishment of the Sawu Sea MPA since the beginning, and others have been involved in the management of the Sawu Sea MPA. Although there is no customary fishers' representative, some members may have worked with customary fishers. The Secretary of the Development Planning Agency confirmed:

> There is no representative of customary fishers in the forum, but the beneficiaries of programmes coordinated by the forum are customary fishers.

The absence of customary fisher representation in the forum is arguably reflected in the lack of support for customary fishers in the forum responsibilities. In general, the responsibilities of the forum according to Decree 74/2013 correspond to the goals of the Sawu Sea MPA. For example, the second responsibility (see Table 7.1 above) focuses on strengthening local communities in managing the Sawu Sea MPA. However, the responsibility does not specifically refer to the roles of customary communities, as mentioned in the Strategic Plan of the Sawu Sea MPA (Figure 5.3). Hence, there is a gap in the goals of the Sawu Sea MPA and the responsibilities of the forum regarding the roles of customary rules and practices.

With this in mind, it should be noted that the differences in the written goals of the Sawu Sea MPA and the responsibilities of the forum have not shaped the programmes of the participating organisations, especially agencies of the provincial government. Interviews conducted with some provincial officials revealed that the local communities that are involved in these programmes are customary communities who are mostly small-scale fishers. This suggests that the provincial government focuses more on the small-scale fishers, which differs from the national government that tends to target non-customary fishers in its programmes (see Chapter 5).

Like the Provincial Conservation Forum, Rote Ndao District Conservation Forum has a board (Figure 7.3) and an executive unit (Figure 7.4). Most of the board members are government representatives, particularly from national and district government organisations, and Nusa Lontar University. Each organisation has a member on the board. The Mayor appointed the Deputy Mayor as the coordinator of the executive unit. This unit is supported by five divisions, which are led by officials from the district government organisations, the Nature Conservation and Nusa Lontar University. The Mayor specified the responsibility of the divisions in the executive unit, but the Mayor did not specify the responsibility of the board members nor the eligibility of both the board and executive members. This lack of clarity is also found with board members on the Provincial Conservation Forum.

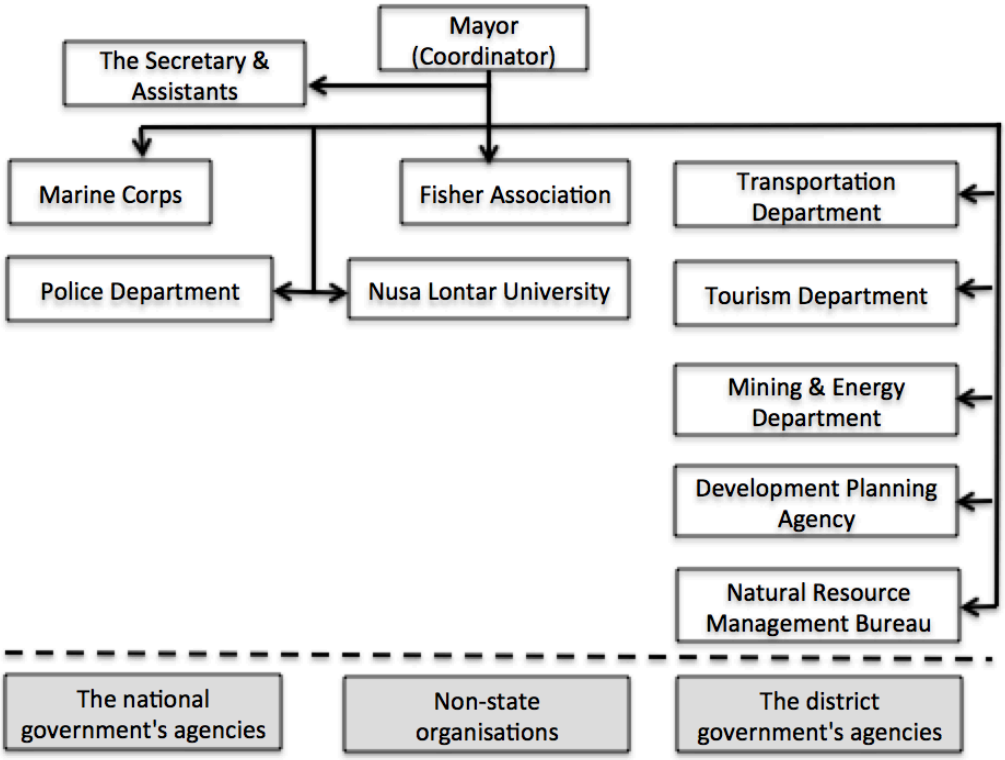


Figure 7.3: The Board of the District Conservation Forum

A noteworthy difference between the Provincial Conservation Forum and the District Conservation Forum is that customary communities play a more significant role in the latter than in the former. The daily coordinator of the District Conservation Forum's executive unit, who leads operational activities, is not a government official as with the Provincial Conservation Forum. Rather, the District Conservation Forum's daily coordinator is the coordinator of the RNFAC. This *adat* forum was established in 2009 and has actively promoted customary rules and practices for natural resource management. The appointment of the *adat* forum coordinator as the District Conservation Forum's executive unit daily coordinator linked the daily coordinator's role with the roles of the *adat* forum in strengthening customary rules and practices. A senior official commented:

> The appointment of the coordinator of the forum was based on advice from the members of the forum and the provincial government. However, the main consideration was that the forum has previously been involved in marine conservation undertaken by international NGOs on Rote and its roles in the revitalisation of customary rules and practices since its establishment [2009] (Interview with Former Head of Economic Bureau)

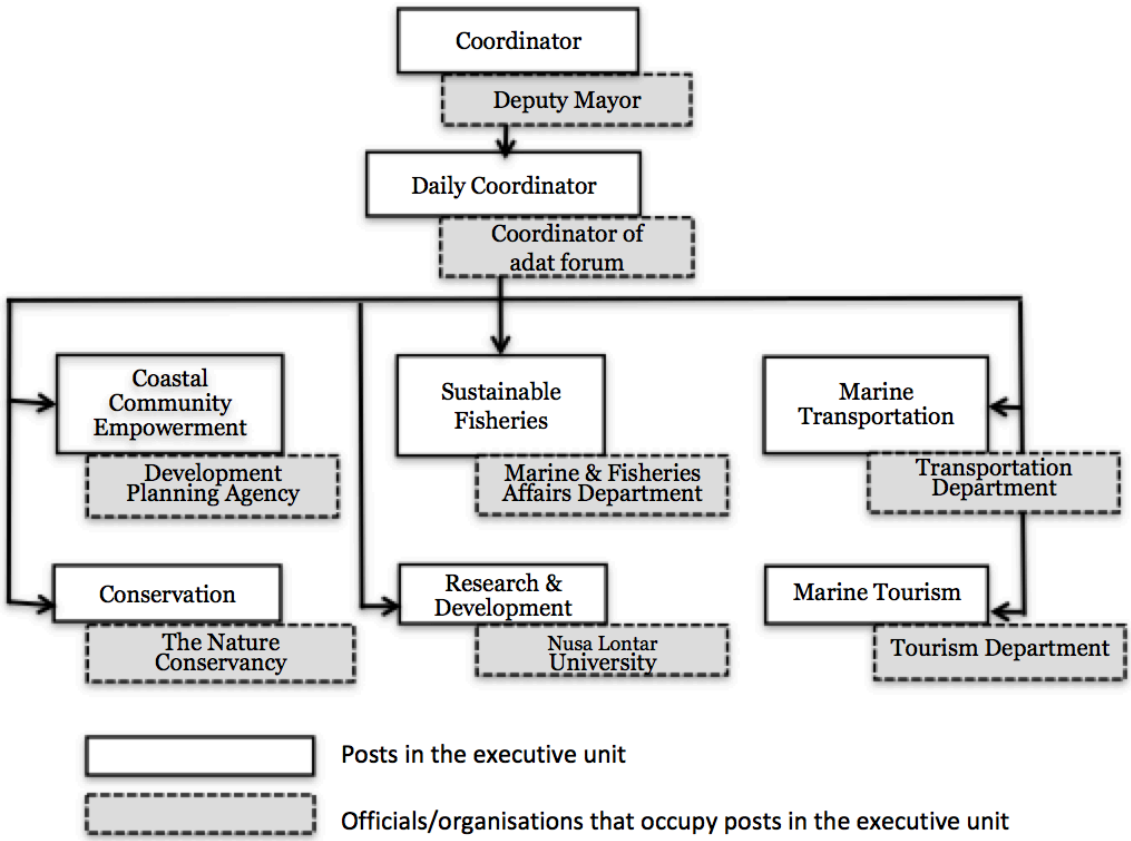


Figure 7.4: The District Conservation Forum's executive unit

The role of the District Conservation Forum, according to Decree 274/2014, is similar to that of the Provincial Conservation Forum, providing advisory functions for the management of Sawu Sea MPA. The board members can provide feedback to the executive unit presided over by the Deputy Mayor. This executive unit coordinates with involved departments at the district government level. The Deputy Mayor has the power to incorporate advisory feedback into policies and their implementation, which support the management of the Sawu Sea MPA. This arrangement strengthens the roles of the District Conservation Forum despite its limited authority.

The role of the executive unit is similar to those of the Provincial Conservation Forum. As outlined by Decree 274/2014, the District Conservation Forum's roles relate to facilitating participation and empowerment of local communities in general. None of the *de jure* roles of the District Conservation Forum are about revitalisation or enactment of customary fisheries for managing the Sawu Sea MPA, which has been undertaken *de facto*. However, the involvement of the forum has enabled customary fishers' voices to be stronger. Together, the

Provincial Conservation Forum and the *adat* forum have revitalised customary fisheries management in several coastal villages. The Head of the Economic Bureau, as a member of the District Conservation Forum, elaborated:

> We have been actively involved in *hohorok* revitalisation. In 2016, we reintroduced the implementation of *hohorok* into six villages. We have set the target to establish *hohorok* in all fifty-eight coastal villages on Rote Island. For 2017, we aim to revive and re-establish *hohorok* in sixteen villages.

The *adat* forum coordinator, who serves as the daily coordinator of the executive unit, has access to the district government to address customary fishers' concerns but the coordinator does not play a significant role in decision-making. The unit lacks authority and resources to take actions addressing customary fishers' concerns. The insignificant roles of the unit are related to the legal mandate about the roles of the District Conservation Forum, which only serves as a collaborative body, as specified in Decree 274/2014. The *adat* forum coordinator confirmed the role of the unit:

> Our role is very limited. Our roles are about supporting the governments and their programmes, which I am not happy about. The unit does not have sufficient authority and financial resources to carry out its roles in strengthening fishers.

The role of the District Conservation Forum declined after the enactment of Law 23/2014, which revoked the authority of district governments in managing fisheries, particularly after the establishment of the Sawu Sea MPA. During the first two years, 2015 and 2016, the forum undertook several activities to re-establish *hohorok* in several villages. However, since 2017, the district government has stopped providing financial support for the forum. The Secretary of the Fisheries and Marine Affairs Department explained that there is no more budget, and there are neither posts nor officials related to fisheries management in the department as a result. Local officials view the Sawu-Sea MPA related activities as the responsibility of the provincial government. Some interviewees confirmed the view of the Secretary:

> For the following year [after 2017], after changes in Law 23/2013 come to power, it will be the national and provincial governments that continue this effort [revitalising customary rules]. We cannot any longer be involved in this activity, as the district governments do not have authority in fisheries marine resource management (Head of the Economic Bureau).

> I am very disappointed. During the last meeting [2016], key government officials did not attend it. Without them, it is useless to raise and discuss problems related to implementing *hohorok*. What I have thought about, and I will propose to the national government is how to empower *manahoro* so that they can undertake monitoring while they catch fish (The District Conservation Forum daily coordinator).

The re-establishment of *hohorok* in Rote Island strengthens customary fishers' roles in fisheries management. In 2016, the national government re-established *hohorok* in six villages, two villages in each sub-district (see Figure 6.4). There are eight *manahoro* to manage *hohorok* in each village, instead of just one as it had been practised prior to the establishment of the Sawu Sea MPA. *Manahoro* serve different voluntary positions in *hohorok*, such as coordinator, deputy coordinator, secretary, treasurer and members. Thus, *manahoro* play different roles, although there are no written instructions regarding the responsibilities of these positions.

In addition to these *manahoro*, there is a coordinator of *manahoro* responsible for managing *hohorok* in all villages within the same sub-district. These villages share the same fisheries and marine resources, and they practise the same CFM. Oelua village, where data were collected, was part of the former Dengka domain (see Figure 6.4). The coordinator explained the reason for having *manahoro* for individual villages and a coordinator across villages:

> We face different challenges now. The size of marine *hohorok* is large. It includes two villages: Oelua and Netenaen. And more villages will apply *hohorok* in the near future. So, it is not enough to have one *manahoro* at the village level to manage *hohorok* across villages. Also, *manahoro* do not work full time [as *manahoro*]. They have their main jobs [as part time farmers and fishers] to focus on. They need to feed their family. Thus, by involving many *manahoro*, they can divide and take turns in undertaking their responsibilities.

The process for selecting *manahoro* during the revitalisation of *hohorok* in 2016 was open to all community members and transparent. All villagers were encouraged to attend the event and were free to nominate several local fishers to be selected as *manahoro*. *Manahoro* work voluntarily; they are not paid. Therefore, selected candidates were fishers that can do the job under this condition. The *manahoro* coordinator elaborated:

> After agreeing on the establishment of the Sawu Sea MPA and its zones, we encouraged them to establish *hohorok* and nominate *manahoro*. It was an open, intensive and voluntary discussion. We did not interfere with the processes as we focused on promoting awareness, voluntarism and support.

There are no written requirements of eligibility for those nominated to be *manahoro*. The MMAF Decree 6/2014 mentions *hohorok*, but it does not set out requirements for *manahoro* and their eligibility. However, the coordinator of *manahoro* noted that nominees need knowledge and the ability to carry out their responsibilities:

> They are well-experienced and active fishers. They know very well the condition of our coastal and marine areas. We did not propose young and passive fishers. We also consider their geographical and social representation within this village; the *manahoro* should represent the diversity of the community members.

The nomination of *manahoro* in Oelua village was undertaken before the establishment of *hohorok* in September 2016 (Amalo, 2016). The Mayor of Rote Ndao, who is ex officio of *maneleo ina huk* (see Chapter 5), installed the nominees in all six villages during the establishment of *hohorok*. This multi-level process, according to the coordinator of *manahoro,* strengthened their legitimacy at both the village and district levels:

> *Maneleo ina huk* installed us during the declaration of *hohorok*, but it was the villagers who nominated us. The nomination and instalment strengthened *hohorok* and our legitimacy. The villagers now know that they need to seek our approval before going fishing and inform us of their harvests. It also bound the district government to support us in managing *hohorok*.

The findings on this theme show that customary fishers play limited roles in the management bodies of the Sawu Sea MPA. This limited role was not because the fishers' representatives do not assume significant posts in the management bodies, but because the management bodies at all tiers of the government play insignificant roles. The management body at the community level plays autonomous roles in managing local marine areas, but it has a limited capacity. The failure of the national government to establish a partnership, which clarifies the rights of and empowers customary fishers, contributes to the fishers' lack of capacity.

7.3 Resource Structure

Human, institutional and financial resources are needed to support the management bodies to undertake their responsibilities. The availability of these resources influences their capacity to apply CFM for managing the Sawu Sea MPA. In general, there is a lack of support from all tiers of government for these management bodies and customary fisheries to use CFM, due to the unclear and changing policy concerning the provision of the resources.

The resources available for the NMU-MPA are insufficient to meet its responsibilities. Interviewees highlighted a lack of both supporting staff members, particularly for positions relating to customary consultation, and financial support for the NMU-MPA. The NMU-MPA tends to see the collaboration in terms of sharing resources to address these problems, which influences its support for customary fishers.

Through Decree 23/2008 and Decree 6/2014, MMAF allows the NMU-MPA to establish working units at the district level. However, the lack of funding support has hindered the NMU-MPA in establishing the units in all districts, and the decreased financial support has forced it to abolish established units. Instead, some interviewees view the benefits of working together with existing stakeholders to overcome the shortage; they view collaboration as a sharing cost strategy. They argued:

> The main reason for not establishing the working units in the districts is because we are not working alone ... There are other agencies of the national government, with sub-national governments and customary communities to undertake activities such as monitoring (The NMU-MPA coordinator).

> We [NMU-MPA] have established community-based conservation groups to help us to undertake conservation ... We do not pay them. We provide them with managerial skills, NGOs focus on technical matters, and the sub-national governments train them for writing reports (The NMU-MPA staff member).

The lack of funding support for the NMU-MPA is because the national government does not clarify it. While Decree 23/2008 does not outline the provision of funding for management units of MPAs, Decree 6/2014 outlined the amount of the required budget and possible sources of funding for the

NMU-MPA. It specifies that the average annual budget required to sustainably manage the Sawu Sea MPA is between US$365,000 and $465,000. However, this regulation does not specify the sources of the funding. This lack of clarification has resulted in decreasing financial support for Coremap from the national government, since 2016. The NMU-MPA staff member clarified:

> The budget [of the NMU-MPA] in 2014 and 2015 was about US$1.2 million. The budget was significant because there was a programme called Coremap that focused on the coral reef rehabilitation [400,000 USD]. However, there is no regulation about the amount of budget from the national government. As a result, in 2016, the programme was discontinued claiming the conservation programme did not produce income for the government.

The termination of funding for Coremap had been driven by several national-based NGOs, such as *Kiara* that focuses on advocating fishers' rights in fisheries (Susanto, 2013). *Kiara* called for the president and MMAF to end Coremap for several reasons. The Secretariat General of *Kiara* highlighted that the source of the US$80 million funding for the second period (2004-2011) of Coremap, was from borrowing, which causes debt. He quoted the report of the State Audit Board, *Performance review of Coral reef rehabilitation programme in 2011* in the Kiara press release, stating that "the programme has not only failed to improve the coral reef but has proved burdensome to the state's financial capacity and the money has been subject to corruption" (Kiara, 2014, p. 1). He also commented that the project has limited fisheries access for customary fishers and failed to apply customary fishery behaviours to fisheries conservation. The failure was due to the "lack of fishers' involvement in the planning of the marine conservation programme" (Susanto, 2013, p.2).

The decrease in funding support from the national government has resulted in several changes. The NMU-MPA terminated the employment of local staff members at the district level. The staff members had a better understanding of CFM than non-local staff members. This decision indicated that the NMU-MPA did not value local staff knowledge of CFM. The coordinator of the NMU-MPA stated:

> We terminated the staff members at the district level in 2017 after the national government stopped funding the Coremap.

Neither the national nor provincial government provide clear guidance on the provision of resources for the provincial-level management body. Decree 74/2013 outlines that the Provincial Conservation Forum gets funding support from various sources in order to undertake its responsibilities. The funding can be allocated through national and provincial budgets and other non-binding sources. Decree 6/2014 specifies other similar sources of funding support for the forum. However, these decrees do not specify the amount of funding from these sources (Interview with Former Head of Tourism Promotion Division at the Provincial Tourism Department).

The lack of clarity about funding arrangements influences the provincial government's support. Prior to the establishment of the Sawu Sea MPA, the provincial government supported the forum, but it decreased the support afterwards. One interviewee revealed that the provincial government learned that according to Decree 6/2014, it is the NMU-MPA's responsibility to manage the Sawu Sea MPA, instead of the provincial government, as regulated in Law 23/2014 for marine areas within 0-12 nm. This change discouraged the provincial government from financially supporting the management of the Sawu Sea MPA. The Head of the Marine Conservation Section at the Fisheries and Marine Affairs Department asserted:

> In the beginning, we provided financial assistance for public consultation and needs assessment. However, after the establishment, the NMU-MPA manages the Sawu Sea MPA, which is an agency of the Ministry of Fisheries and Marine Affairs. Thus, we can no longer support it because there is no longer a legal basis for the involvement of the provincial government.

These changes in provincial government support relate to its long-time effort to control fisheries and marine resource management in the Sawu Sea. Since 2005, the provincial government has proposed that the national government acknowledges NTT as an archipelagic province which justified the extension of NTT marine jurisdiction beyond 12 nautical miles among its islands (Lewokoda, 2017; Seldadyo, 2011). The provincial government aimed to manage the Sawu Sea MPA with financial support from the national government. As such, control over the Sawu Sea MPA will enable the provincial government to regulate migratory fisheries and tackle illegal fishing activities in the 12 nautical miles of the Sawu Sea that has been managed by the national government. The following

comments highlight how some provincial government officials acknowledged this motivation:

> Initially [during the preparation and planning stage for the establishment of the Sawu Sea MPA], we thought the purpose was to undertake conservation, especially for whales. For this purpose, the provincial government will be allocated more funds for managing fisheries and empowering local fishers. So, we really supported it (The Secretary of the Development Planning Agency).

> We [the provincial government] only watched them [outside fishers] catching and taking fisheries abroad [IUU fishing in the past]. Thus, we thought by establishing conservation areas [in the Sawu Sea MPA] between islands that serve as the entrance to the fishing grounds, which are managed by the national government, we can control fishing activities as fishers need to get our [the provincial government] approval (The Head of the Marine Conservation Section at the Fisheries and Marine Affairs Department).

One international NGO that has funded and been involved in establishing the Sawu Sea MPA and reviving CFM is The Nature Conservancy (TNC). According to the coordinator of the NMU-MPA, TNC has actively supported the revival of CFM. It has allocated significant funding for the revival. Its coordinator believed that the revival is important because formal laws are insufficient to manage fisheries. Thus, he did not see any other interest of international NGOs in reviving CFM apart from empowering customary fishers. He stated:

> The revival is important because it empowers local fishers. It is not undertaken for the interest of the NGOs. The conservation projects are not for the interests of changes, but it is the rights of the fishers to manage fisheries according to customary practices and to build up fisheries compliance with the projects. We discussed all the projects in transparent ways and the projects are undertaken after getting our approval.

In responding to the decreasing financial support, TNC coordinator highlighted the need to clarify the sources of funding and establish sustainable joint funding. This would address the need for financial support for the management of the Sawu Sea MPA in the long term and compensate losses suffered by local fishers. He added:

> The [joint] fund is essential because we need to commit to long-term outcomes. Our role here is to facilitate; we are not here to take over funding responsibility, which I think is unfortunately what many parties [both national and sub-national governments] have been hoping. The problem is because the funding responsibilities of the participants [government and non-government organisations] are

> still unclear. At the local level, it is because sub-national governments have yet to establish customary communities' right in a local law.

He stated that such an arrangement has not been established, leaving uncertainties in funding support for the management of the Sawu Sea MPA and local fishers who have experienced decreases in fisheries accesses:

> There are many stakeholders that shape the success of the Sawu Sea MPA. We [TNC] have led and provided resources for coral reef restoration here and the recent establishment of the MPA, but I think it should be a joint effort … involving all stakeholders. Strengthening customary fishers to involve in this project has been also our focused for decades. A challenge that needs to be addressed is the short-term impacts of the Sawu Sea MPA on the local fishers … We would not address this issue. Unfortunately, we have not … discussed and solved this issue with other stakeholders. The national government has taken an initiative to support customary communities. It established a directorate for resolving conflicts on tenure and empowering customary *adat* [under the Ministry of Environment and Forestry] in 2015. Thus, it has allocated significant funding to this directorate, but we have not united our funding support. However, sub-national governments have not enacted a law acknowledging customary fishers' rights in fisheries management and outlining the responsibility of sub-national government in supporting the fishers.

According to MMAF Decree 6/2014, funding support for the District Conservation Forum is available through numerous sources e.g. national, provincial and sub-national governments' budgets, yet the decree does not specify in detail the amount of support required from each tier of government. Although the national and provincial governments provided training for the forum members, they do not provide financial support for the forum to manage independently. Meanwhile, the district government provided financial, staff and secretariat support for the forum only in the early establishment of the Sawu Sea MPA.

However, the change in the district government's marine jurisdiction following a new sub-national government law (Law 23/2014), has diminished its support. Some interviewees confirmed:

> We have got support from the district, provincial and national governments and also from TNC but it was mostly for meetings and travel to undertake training, seminars and promotional activities. The support was very limited, and we do not manage the fund (Head of the Economic Bureau).

> The district government supported [the management of the Sawu Sea MPA] with funding [prior to 2017], but it was insignificant. And now, the division and officials [in the Fisheries and Marine Affairs Department] to manage marine conservation has been dissolved [shifted to the provincial government]. The head [of the Fisheries and Marine Affairs Department] attended meetings in the past, but when it comes to distribution of responsibilities, there is no more staff to undertake them (Secretary of Fisheries and Marine Affairs Department).

The change in funding support has impacted the District Conservation Forum activities. This forum does not have its own budget for reporting and monitoring. Thus, the forum relies on the national and provincial governments' support and activities to undertake monitoring and information provision. As a result, after the establishment of *hohorok,* the forum has not always had up-to-date information about the progress of fisheries management. In some cases, the forum cannot thoroughly investigate an incident because of financial constraints. The head of the Economic Bureau confirmed this:

> The district government provided some budget for promotional activities for the establishment of *hohorok* at the village level. We do not have financial support to undertake activities such as monitoring and reporting after the establishment of *hohorok*. So, we do not have first-hand information and cannot provide reports about the Sawu Sea MPA's progress. We often get unwritten reports about a matter, such as illegal fishing activities, but we cannot investigate further due to the absence of financial support.

An interesting development is that fishing communities have come to strongly support the establishment of the Sawu Sea MPA on Rote Island, despite the unclear resource structure. Their support relates to their concern about widespread illegal fishing activities by outside fishers that had depleted fisheries in the surrounding marine areas. Some members of these communities not only comply with the Sawu Sea MPA rules but also provide financial support for the establishment of the Sawu Sea MPA. The Head of the Economic Bureau explained that local fishers hope for an improvement in law enforcement against illegal fishers through the establishment of the Sawu Sea MPA. This support, as he believed, is a key to the success of the Sawu Sea MPA:

> I am optimistic [about the effectiveness of customary rules] because, for example, in Nggodimeda village, fishing communities have voluntarily born some costs to support activities for the establishment of *hohorok*. They have an expectation that the Sawu

> Sea MPA can benefit them by tackling illegal fishing activities by outside fishers.

The establishment of *hohorok* brought benefits for customary fishers because they can exercise not only exclusive access rights but also management rights. Decree 6/2014 concerning the indigenous zone in the Sawu Sea MPA specifies that where customary fishers establish *hohorok*, it is only local fishers that can access and manage fisheries in the area. The coordinator of *manahoro* confirmed:

> Now, as long as fishers can prove that they are legitimate dwellers in Oelua village, then they can fish here. Outside fishers [large-scale modern fishers] are not allowed to fish here [indigenous and traditional zones].

The exclusive management rights of local people prevent the transfer of fisheries rights to other fishers within the wider community because the rights are held collectively. *Hohorok* focuses on collective ownership; similar to its previous practice, it does not recognise an individual quota system nor facilitate the transfer of rights beyond communities with the distribution of benefits to certain parties. The coordinator of *manahoro* elaborated on the consideration that shapes *hohorok*:

> Fishers from other villages can fish here, but they need to get our permission. We need to manage the fishing time so that all fishers can get similar benefits. We do this in order to increase awareness and compliance of the fishers in this community.

Inherently, *hohorok* manages economic sustainability in terms of livelihoods but does not consider the environmental sustainability of fisheries; the rules focus on the livelihoods of fishing communities, but *hohorok* limits access to fisheries beyond a *hohorok* environment (see Chapter 6). *Hohorok* imposes a gradual limitation in access rights and a gradual sanction for violators. These gradual approaches can serve as incentives for local fishers. They diminish resistance and allow local communities to adjust their existing livelihood activities to the changes. Nevertheless, *hohorok* does not adopt these approaches for the sustainability of fisheries and marine resources. The interviewed *manahoro* explained some examples of the approach:

> The communities have relied on the activity [sand mining] for a living for generations and it requires significant efforts to mine the

> sand. Thus, we do not totally put an end to sand mining (*Manahoro* in Oelua village).
>
> First time violators are tried according to *hohorok* rules, but repeated violations will be tried according to legal laws, in addition to [*hohorok*] fines (The coordinator of *manahoro*).

The other benefit in managing *hohorok* is incentives for *manahoro* to build their commitment. *Manahoro* cannot fully undertake monitoring and supervision of the *hohorok* area because they have to work to meet their family needs for food and it is costly to undertake monitoring regularly. Therefore, provision of supporting resources both encourages and facilitates *manahoro* to undertake their responsibilities:

> A marine *hohorok* differs from a terrestrial one. It requires commitment and resources to undertake monitoring and supervision regularly. We hope that the national government supports our *manahoro* in undertaking their responsibility (The District Conservation Forum daily coordinator).

It may be difficult for the national government to meet the expectations of *manahoro* because the NMU-MPA has not established a partnership with customary fishers. The instalment of *manahoro,* for example, was based on Mayor Decree 255/2016, *Establishment of Manahoro Tasi Rote Ndao* (Mayor of Rote Ndao, 2016). The establishment of other customary groups to perform particular activities, such as monitoring and conservation of marine species, was based on the decree of the Head of Rote Ndao Marine Affairs and Fisheries Department (2016). These decrees do not have binding power in the hierarchy of Indonesian legislation (Government of Indonesia, 2011), and they do not specify the rights of, and funding support for community groups. More importantly, these two officials (mayor and Fisheries Department officials) are now external to the Sawu Sea MPA; thus, they do not have an obligation to support *manahoro* in managing the MPA.

Overall, there is a lack of resource support for the management bodies that are responsible for supporting customary fishers. This problem was affected by unclear provision of funding support, a decrease in the national government's funding support and the exclusion of the provincial and district governments

from managing the MPA. As a result, the customary fishers' lack of capacity to manage *hohorok* remains unaddressed.

7.4 Fishers' participation in decision-making

Decision-making relates to the extent of control the fishers and/or their representatives exercise to voice their customary practices and rules in fisheries management. As presented below, the power of customary fishers and/or their representatives varies, but with higher level management bodies, which have more power in shaping the management of the Sawu Sea MPA, customary fishers have limited power in decision-making.

Decree 23/2008 does not provide a clear mechanism regarding the decision-making process within the NMU-MPA. It states that in managing the NMU-MPA, the coordinator is required to lead based on the principles of "coordination, integration and synchronisation" (Article 17). However, the decree does not specify the methods for implementing these principles nor provide guidelines for decision-making and planning processes involving fishing communities.

The lack of clarity concerning decision-making by NMU-MPA influences the applicability of CFM in the Sawu Sea MPA. The processes for the establishment of the Sawu Sea MPA were based more on expert knowledge than on local fishers' voices. Customary fishers were consulted, but they did not have a formal role in decision-making. The Governor established a Team for Studying, Establishing and Planning of the Management of the Sawu Sea MPA (TSEPM), in order to prepare planning documents for the Sawu Sea MPA. In its evaluation report, *Lessons learned from the Sawu Sea MPA*, the team, acknowledged the limited roles of customary fishers in decision making:

> The involvement of customary fishers in the establishment processes of the Sawu Sea MPA was about consultation; they provided feedback about management plans and zoning. They did not have access to decision-making (2014, p. 25).

A senior fishery official confirmed the TSEPM's finding of the monopoly of experts and the lack of funding in shaping the establishment of the Sawu Sea MPA during the initial stages:

> It was during the initiation stage [prior to the establishment of the MPA in 2014], we unilaterally decided some issues, including delineation. We did not discuss these with fishers because it would take a long time and cost too much money. We were competing with fisheries depletion (The Head of the Marine Conservation Section at the Provincial Fisheries and Marine Affairs Department).

The approach changed following the establishment of the Sawu Sea MPA in 2014. In most communities, the NMU-MPA benefited from fisher's information about the state of fisheries, which shaped zoning delineation. When the Sawu Sea MPA's zones were established, the NMU-MPA consulted customary fishers to discuss the delineation. According to the NMU-MPA coordinator, fishers now have a significant role in decision-making:

> We worked together; we sat together, drank coffee together; we talked heart to heart about the importance of conservation. Even after establishing the zones, we still consulted them. If they disagree with a zone, we remove it.

The coordinator added further that in undertaking the NMU-MPA's programmes, following the establishment of the MPA, they allowed fishers to influence decision-making, but the decisions were not about the management of the Sawu Sea MPA. He explained:

> [Similarly], we cannot force our programmes [on them]. For example, if they need rowing boats, we adjust to their needs. We do not impose our programmes. We carry out the programmes in accordance with their needs and activities. We support them so that they will support us in managing the MPA. So, basically, we need one another. [However], at the moment, our programme is small; it has not involved many fishers. Hopefully, it will do in the future.

The lack of customary fishers' access to decision-making in the Sawu Sea MPA is due to the unclear roles of customary fishers in the planning stages. NMU-MPA did not involve the fishers in the team commissioned to draft the medium-term planning documents for the MPA, as recommended by MMAF Regulation 30/2010. Further, the decision-making process is not set out in any particular law or regulation. There have been changes in the approaches to allow fishers to influence decision-making, but these changes are based on individual initiative

instead of a legal provision. Thus, there is no certainty that customary fishers can influence decision-making.

The decision-making approach by the Provincial Conservation Forum is similarly unspecified in either Decree 74/2013 or Decree 6/2014. When interviewed about the approach, both the Head of the Marine Conservation Section at the Fisheries and Marine Affairs Department and the former Head of Tourism Promotion Division at the Tourism Department indicated that the forum tends to rely on a collective and consensus-building approach, in which matters are deliberately discussed and negotiated by board members. A senior official confirmed the decision-making approach, pointing out:

> It is true that we do not have established rules about meetings, decision-making, etc. We hold a monthly meeting to evaluate and provide feedback for various issues about the management of the Sawu Sea MPA. But, in most cases, decision-making is based on negotiation for consensus (The former Head of Tourism Promotion Division at the Tourism Department).

These comments suggest that the absence of formal rules regarding decision-making has influenced the forum meeting activities. During the early stages in the establishment of the Sawu Sea MPA, the forum held regular meetings but at the time of interviews in mid-2017; the forum had not met since early 2017. In previous years, meetings had been mainly initiated by the provincial agencies, suggesting that the other members, particularly the NMU-MPA and the Nature Conservation, depend on the provincial government to lead the forum. As explained by a senior official at the Fisheries and Marine Affairs Department, meetings help board members to harmonise and evaluate their programmes:

> It had a regular meeting schedule. It used to be once a month, on the first Friday of a month. So far this year [2017], we have not had a meeting. Through meetings, we discuss many things, how we [members of Provincial Conservation Forum] synergise and evaluate our programmes, including addressing problems of small fishers (The Head of the Marine Conservation Section).

Despite the absence of guidelines about decision-making, the forum organised several public consultations during the early stages of the Sawu Sea MPA establishment (TSEPM, 2014). The consultation involved participants from 110 villages in ten districts. After the MMAF officially established the Sawu Sea MPA in 2014, the TSEPM discussed the management plans and zones with

people in 125 coastal villages. Thus, the forum widely consulted the public about the management plans and marine zones.

Even though the consultation was undertaken widely, the decision-making favoured the interests of local elites such as village officials and customary leaders. The TSEPM acknowledged in its 2014 report that the fora took place at a sub-district level, instead of a village level, which was more accessible to local elites than customary fishers. "The participants were chosen by the head of villages" (TSEPM, 2014, p.25), without any guidelines concerning the participants' representativeness. The decision was made based on the feedback from elites; "the people did not get involved in decision making processes", "women were involved but at small number" (TSEPM, 2014, p.2). Thus, in its 2016 report, *Evaluating the public's perception on the Sawu Sea MPA,* the TSEPM (2016, p. 114) reported that almost 70% of the 159 participants across villages in Rote Ndao district had never heard about the Sawu Sea MPA.

The decision-making at the District Conservation Forum is similarly unspecified by Decree 274/2014. There is no explanation for this absence. The fact that the forum role is about providing advice can imply that it does not make decisions that require written rules. In addition, the board members represent different tiers of government with different mechanisms for decision-making. Thus, as some interviewees clarified, the decision-making within the forum involves discussions and negotiations to achieve consensus. The interviewees confirmed:

> We discuss most issues together with the other members of the board and other stakeholders in a friendly and voluntary manner. There is no compulsion. All decisions are made after getting the agreement of the members, including the agreement of the communities regarding zoning in the Sawu Sea MPA (Former Head of the Economic Bureau).

> I noticed that discussions [during the public consultation] were so dynamic. During the initial stages, many fishers rejected the conservation plans, especially in marine zones with abundant fish. So, we need to spend more effort to get the support of these fishers. We are lucky to have *hohorok* so that people do not see conservation as an external idea; instead, they supported the plans (the Forum daily coordinator).

The decisions of the forum appear to be made with the knowledge and support of involved parties. However, according to the Secretary of the Fisheries and

Marine Affairs Department, the forum rarely holds meetings, which suggests that the District Conservation Forum does not play a significant role or make significant decisions in the management of the Sawu Sea MPA. Despite being a significant member of the forum, the secretary, in fact, never attended a meeting held by the forum.

> There is no regular meeting. The coordinator [of the executive unit] is the Deputy Mayor. So, there will be a meeting if the Deputy Mayor is available. We have never attended a meeting. We have never been involved [in attending meetings] so we do not know about its arrangement (The Secretary of the Fisheries and Marine Affairs Department).

The Head of the Economic Bureau made a similar comment to that of the Secretary:

> Prior to 2017, there were some meetings. Since early 2017, we have not held a meeting, although we have a plan to hold a meeting this year. However, we [members of the forum] often meet [informally] when we undertake public consultation for the establishment of *Hohorok* at the village level.

The absence of clear decision-making protocols creates uncertainties about the role of the forum in addressing fishers' problems. Several problems raised by customary fishers who have played key roles in the revitalisation of *hohorok*, have not been addressed. The daily coordinator, quoted below, linked the unsolved problems to the absence of regular meetings of the forum:

> There are several problems I would like to raise and discuss within the forum. Several *manahoro* have raised problems associated with regular patrolling of *hohorok* … however, these problems will stay unsolved if the board of the forum cannot get together [hold a meeting to discuss the problems] and find their solutions. I am very disappointed.

The establishment of *hohorok* strengthens the power of customary fishers in decision-making at the community level. According to the coordinator of *manahoro,* decisions about the indigenous zone and *hohorok* rules were based on negotiation and agreement between the national government and local fishers. Similarly, *manahoro* were directly nominated and elected by customary fishers. A *manahoro* from Oelua village elaborated on the mechanism:

> We voted *manahoro* from a list of names that were nominated by the participants [fishers]. The one who got the highest number of votes became the coordinator, the second became the deputy, the third and

> the fourth became the secretary and the treasurer and the others serve as members.

The process for establishing *hohorok* in Oelua was open, but it did not involve many members of the community. The coordinator confirmed that there was only one consultation meeting held by the forum, and this was when fishers were away fishing. As a result, there are some members of the communities who were not aware of the *hohorok* rules in detail. An active non-indigenous fisher who operated several boats and employed some workers in Oelua village is among the fishers who missed the consultation process. Some interviewees confirmed this information:

> The consultation was open, but it was held [by the forum] only once and attended by just over twenty fishers. Many fishers could not attend it because they were away fishing (Coordinator of *manahoro*).

> I knew about *hohorok* and the recent revitalisation efforts from other fishers, but … I did not know if marine areas within 0-4 nm are managed under *hohorok* and are designated only for local fishers (A non-indigenous fisher).

Challenges in implementing *hohorok* rules relate to this lack of fishers' involvement in the decision-making. There was no requirement for a quorum for decision-making to establish the rules and select the enforcers (*manahoro*). It seems that customary fishers were not involved and local elites dominated the decision-making. There was a lack of representation for customary fishers. The coordinator of *manahoro* explained:

> In *hohorok*, our [*manahoro's*] job is to uphold the rules, while decision-making is in the hands of the people. Yes, I agree that decision-making involved many 'big people' [elites], but the process was open to anyone. There was no requirement for the minimum number of fishers to attend it. And we don't see their [elites'] involvement as an issue, as long as the decision-making was transparent.

Customary fishers' power in decision-making varies through the tiers of government: the higher the tier, the weaker their power. Customary fishers provided information, but decision-making tended to be shaped by science-based information. While there are fishers' representatives within the provincial level management body, and customary fishers' representatives within the district level management body assuming key posts, these two management

bodies do not make significant decisions, as their roles are limited to being coordinative bodies. Only at the community level management body do customary fishers have a control in decision-making without external intervention. This enables customary fishers to make decisions autonomously in applying *hohorok*, but the lack of access to decision-making at higher-level management bodies does not enable them to address problems beyond this level.

7.5 Information provision

Rules affect the extent to which information is available for and provided by the participants. In this study, rules about information provision for and by customary fishers influences the application of CFM within the Sawu Sea MPA. However, as presented below, information provision for and by customary fishers is limited due to several problems, such as the lack of formal recognition of the rights and responsibilities of customary fishers.

There are several mechanisms through which the NMU-MPA provides information for the stakeholders. At the planning stages, MMAF (2010) specified in Decree 30/2010, *Management plan and zoning of MPAs* that the NMU-MPA must undertake public consultation when preparing planning documents. MMAF specified in Decree 23/2008 "copies of reports of its programmes [the NMU-MPA], which are submitted to the ministry, should be made available to other organisations that have functional relationships" (Article 22). These are the organisations that make up the TSEPM, the team that prepared the medium-term planning documents for the Sawu Sea MPA. The organisations, according to Decree 30/2010, include provincial and district governments, NGOs, customary communities, and the private sector.

In the early stages of developing the Sawu Sea MPA, the NMU-MPA exchanged information with the stakeholders at both provincial and district levels. The information was widely exchanged because the TSEPM (2010) undertook consultation processes involving representatives of 125 of the 195 coastal villages within the Sawu Sea. The NMU-MPA staff member confirmed:

> We undertook regular visits and consultation with the fishers. In there [communities], we share a variety of information. We do not provide special reports to the fishers. In addition, we share information including thematic campaigns through newspapers, radio, television and the Internet.

The provision of written information to local stakeholders, however, is not regular, unlike the required provision of reports to the national government. The NMU-MPA staff member explained:

> We provide monthly reports to the national government ... They are [only] activity-based reports such as joint training and monitoring activities that we share with the provincial government. We also provide unwritten reports during regular meetings with the provincial government. We have established some community-based conservation programmes. We have provided some assistance, but it is the community that is managing the conservation. Thus, local communities can keep up with the progress of conservation.

MAAF (2015) took further action through Regulation 21/2015 by requiring MPA management bodies to involve fishing communities in information provision. This regulation states that a partnership between the NMU-MPA and the stakeholders, including customary communities can be built (Article 3) through a legal agreement (Article 6) to undertake numerous activities, such as monitoring and data collection (Article 10). However, the NMU-MPA has not established any formal partnership with customary communities. Instead, the NMU-MPA relies on informal community groups established by the district government:

> They [customary fishers] support [the NMU-MPA] in many ways. For example, there are community guard groups ... They are trained with monitoring skills and equipped with communication gadgets. If there is bombing activity, they will contact us at the first opportunity, before they assess its impact on fisheries (The NMU-MPA coordinator).

The information provided by the Provincial Conservation Forum uses numerous methods, but customary fishers play limited roles. Prior to the establishment of the Sawu Sea MPA, the forum organised numerous workshops and training to promote conservation plans and seek feedback from local communities. These fora enabled the provincial government to interact and exchange information with related stakeholders. However, as an interviewee elaborated:

> Customary fishers were not involved much in the formal fora, such as workshops. They have difficulty using a language different from their mother tongue and because the government at all tiers used technical language; it was difficult for the fishers to understand (the Head of the Fisher Empowerment Section at the Fisheries and Marine Affairs Department).

The forum tends to be more accountable to the provincial government than to customary fishers. The forum does not produce regular printed information (such as reports and newsletters) related to its activities for fishing communities, as it does for the provincial government. This difference reflects the absence of information requirements in the Governor's Decree 74/2013. The forum provides press releases of its activities to the media, as well written reports to the provincial government (Interview with Head of the Marine Conservation Section at the Fisheries and Marine Affairs Department). However, while customary fishers have no access to media reports, some members of the forum (The Secretary of the Development Planning Agency and the Head of the Fisher Empowerment Section at the Fisheries and Marine Affairs Department) added that they have never received monthly written reports about the forum activities.

An absence of guidance for communication responsibilities influences customary fishers' rights in information provision. The Governor specifies in Regulation 74/2013 that the forum, especially the executive body, is responsible for undertaking monitoring and providing reports of its activities on a regular basis. However, there is no guidance relating to the content of the reports, to whom the reports should be provided, or the rights of fishing communities in providing information and accessing the reports. There is no clarity about the mechanisms by which customary fishers can access information about the forum activities.

Customary fishers contributed to information provision in the earlier stages of the Sawu Sea MPA's establishment, according to an interview with the former senior official at the Tourism Department. As noted in Chapter 4, for some time, Bajo fishers on Rote Island have fished across the country and in neighbouring countries, especially Australia. This activity has enabled them to accumulate knowledge about fisheries across boundaries. However, neither Decree 6/2014

nor Decree 74/2013 recognised these fishers' knowledge and roles for managing the MPA.

A challenge for information provision relates to the risks in undertaking marine monitoring and supervision because of the lack of resources for suitable surveillance technologies. A lack of marine transport safety hinders officials and local fishers from monitoring and providing information. As explained by an interviewee, marine monitoring and supervision activities are risky:

> The geographical challenges in undertaking monitoring are great, especially during the rainy season. In 2014, the boat that was used to undertake monitoring for small islands in Rote sank. As a result, some of our friends lost their lives (The former head of the Tourism Promotion Division at the Tourism Department).

There are clear mechanisms by which board members get and provide information, both internally and externally, at the District Conservation Forum. Decree 274/2014 requires the forum to undertake monitoring and provide reports of their activities and commissions the executive unit to facilitate communication between the forum and fishers. However, the Decree does not specify the frequency of the monitoring and reports, nor the particular roles of customary communities in undertaking these activities. According to the Head of the Economic Bureau, the forum tends to rely on initiatives of the Provincial Conservation Forum to undertake monitoring and supervision. This reliance can explain the lack of clarity concerning information provision because the activity requires financial support from the district government.

In the preliminary stages of the establishment of the Sawu Sea MPA, the District Conservation Forum undertook a series of consultation activities. Together with the district government, the forum held meetings at both district and community levels involving customary fishers. The forum worked closely with customary communities and religious organisations, particularly churches, to promote *hohorok* to local communities. Therefore, as the daily coordinator noted, local fishers got both oral and written information about the revival of *hohorok* and its rules.

The District Conservation Forum initiated information provision by customary fishers, but it has not provided support for customary fishers. Some officials at the forum identified the problems of customary fishers in undertaking monitoring and supervision, but they saw the national government as the solution to the problems. This is because the district government is strongly dependent on the national government for financial support. The officials did not identify the importance of the district government's intervention to solve the problems:

> I have heard about the difficulty of *manahoro* undertaking monitoring. Thus, I will propose to the national government to support *manahoro* so that they can undertake monitoring when they go fishing (The daily District Conservation Forum coordinator).

Information provision at the community level relies on face-to-face interaction. The size of Rote Island villages, including Oelua village, is small. This enables *manahoro* and fishers to interact directly by visiting one another. Initial public consultation, training and workshops with the local community also relied on intensive face-to-face communication between villagers and other stakeholders at all government tiers. Now, to facilitate quick communication and responses, the NMU-MPA has provided the community/*manahoro* with communication devices, particularly mobile phones, allowing the *manahoro* to easily contact the national, provincial and district authorities.

However, there is a lack of consistency in the information provision involving customary fishers. In the establishment of the Sawu Sea MPA, customary fishers, particularly non-indigenous Bajo fishers, provided information on the characteristics of fisheries and resource users. This has not been carried forward into managing the MPA. The coordinator of *manahoro* indicated a lack of capability among indigenous customary fishers to understand the state of fisheries. He also emphasised the need to work with other parties, although the management of *hohorok* did not involve Bajo fishers. He explained:

> We provided information about fisheries [in the surrounding marine areas], which was used to establish the [indigenous] zones. However, we knew the information about the population of fisheries from experts. We can predict the stock of fisheries from our daily catches, but we cannot provide details. Thus, we need to work with other parties.

In undertaking their responsibilities, *manahoro*, in fact, do not work on their own. *Manahoro* do not undertake monitoring regularly themselves. They rely on other fishers for information about suspicious fishing activities. Thus, transport limitations, such as seaworthy boats, do not always restrain *manahoro* from guarding the area. This work is possible because, as the coordinator of *manahoro* confirmed, local fishers have strong ownership of the conservation effort:

> The communities support *hohorok* because they got its benefits [increased fisheries catch]. We believe that without conservation, some fisheries will disappear. We undertake supervision daily. Now, we do not have boats to undertake supervision. We get information from our fellow fishers, but not always.

A problem that most *manahoro* highlighted is the difficulty in regularly monitoring outside fishers. They have no difficulty monitoring local fishers, as there is an integrated fishing harbour to monitor the activities of local fishers and their catch. However, *manahoro* do not have sufficient resources, such as boats and fuel, to monitor outside fishers. *Manahoro* must rely on local fishers for information about the fishing activities of outside fishers, but local fishers do not approach outside fishers in the sea for further detailed information. Some interviewees acknowledged this difficulty:

> It is difficult to undertake monitoring daily without resources from the [national] government. We can get information about fishing activities by outside fishers from local fishers, but our fishers cannot get detailed information about the other fisher's activities. But again, we need fuel and boats to enable us to monitor regularly and to make quick responses (A *manahoro* in Oelua village).

> We can easily detect from the fish on the dock in the harbour if it is caught by legal or illegal methods (*Manahoro* coordinator).

Thus, the national government has established regulations about information exchanges and provisions. It requires the management bodies, particularly NMU-MPA, to provide the same reports it submits to MMAF to other organisations, including customary fishers, and to involve customary fishers in providing information. However, while the information provided by the NMU-MPA to customary fishers is mostly about its activities, which is provided through local media, it is different from the one it provides to MMAF. The NMU-MPA has failed to empower customary fishers to provide information. The NMU-MPA does not fully comply with the regulations, but this problem has

been contributed to by a lack of customary fishers' capability to be involved in information provision about fisheries, particularly in large-scale marine environments.

7.6 Surveillance and law enforcement

Ostrom and Crawford (2005) do not specifically discuss surveillance and law enforcement in the IAD framework (see Chapter 3). However, illegal fishing activities by outside fishers and the lack of law enforcement have been the main contributors to fisheries depletion across Indonesia (Chapter 5), which in turn, influences fisheries management and the marginalisation of customary fishers.

Illegal fishing had long been a concern of customary fishers in NTT prior to the establishment of the Sawu Sea MPA. After its establishment, several newspapers (Amalo, 2014; Bere, 2015; 2016a) have continued to report that local officials and fishers across NTT have complained about illegal fishing and insufficient law enforcement by the national government. In its evaluation, TSEPM (2016) found that up to 50% of participants saw illegal fishing as the main problem. Indeed, the provincial government blames the national government for illegal fishing practices (Amalo, 2014), as these practices take place in marine areas managed by the national government and with its knowledge.

The national government plays a bigger role than the provincial government in law enforcement. The former and current Heads of the Marine Conservation Section at the Fisheries and Marine Affairs Department shared their views that illegal fishing practice "happened in the marine areas beyond 12 nautical miles", which fall under the jurisdiction of the national government. Thus, the former official further stated that the problem of illegal fishing was due to a lack of the national government's willingness to fight against it:

> In the past, transhipment [unreported fishing] was allowable [by the national government]. Most fishing permits [beyond 12 nautical miles] are managed by the national government. We only watched them [outside fishers] catching and taking fisheries abroad. We do not have authority to enforce the law on illegal fishing activities by outside fishers.

Interviewees representing the provincial government shared the same view about illegal fishing undertaken by outside fishers. They argued that local fishers do not commit illegal, unreported and unregulated fishing, as they have limited fishing capacity and fish mainly to meet their daily needs. The interviewees made the following comments:

> Our fishers do not focus on fisheries production. I mean they do not set a certain target to be pursued. It is the national government's target, not the local fishers', which is imposed on the large-scale outside fishers (The Secretary of Development Planning Agency).

And:

> Our ancestors have undertaken fishing in sustainable ways … They did not catch fish everywhere and at all times because they knew that this unlimited fishing would deplete the fisheries (The former Head of the Marine Conservation Section at Fisheries and Marine Affairs Department).

The NMU-MPA coordinator acknowledged that national government policy is the key to law enforcement. He highlighted the policy of the current MMAF that has taken strict action against illegal large-scale fishers and discontinued fishing permits for foreign fishers, including NTT. The NMU-MPA coordinator explained:

> There is [illegal, unreported and unregulated fishing] but not as much as it used to be. The Navy and the Police [members of the Provincial Conservation Forum] have repeatedly caught illegal fishing vessels in the NTT after getting reports from local fishers. Thus, we have seen increased catches by customary fishers in the NTT … The improvement is especially due to the commitment of the MMAF [Mrs Susi Pujiastuti] who has taken serious action against foreign fishers and discontinued their business in Indonesia.

The NMU-MPA coordinator believed that local fishers are equally important in law enforcement. While the fishers have been marginalised, due to the lack of law enforcement, they can provide information about illegal fishing activities. Media have reported that local fishers have provided information to the national government about illegal fishing by foreign fishers. Thus, the coordinator stressed that the national government needs to continue building the fishers' compliance and support. This view reflects the government's awareness of the significance of the customary fishers' role in fisheries management. He added:

> Because we just established the Sawu Sea MPA, we do not routinely conduct supervision. We rely on local fishers for information about fishing activities, including illegal fishing. [Thus, we need to] continue working with local communities to strengthen them and build their trust in law enforcement.

The establishment of the Sawu Sea MPA has led to the establishment of a *Quick Response Unit* with both national government police and navy personnel as members. The unit gets managerial and financial support from the NMU-MPA to undertake patrols and quickly respond to illegal fishing activities. According to a senior official, the unit has contributed to an improvement in law enforcement:

> We have achieved [law enforcement] and punished vessels [outside fishers] breaking the law in the Sawu Sea MPA. It was the unit that caught the transgressors [after getting information from local fishers] (Interview with the former head of Tourism Promotion Division at the Tourism Department).

In undertaking law enforcement activities such as monitoring and supervision, the forum relies on both the unit and customary fishers. The fishers provide first-hand information about illegal fishing activities to enable the unit to respond quickly. The effort has been more effective since the forum began to provide communication devices, particularly mobile phones, to help groups of fishers to contact the unit when they detect illegal fishing activities. The NMU-MPA coordinator explained:

> They [customary fishers] provide support in many ways. For example, there are community guard groups. The national, provincial, and district governments together with the NMU-MPA formed these groups. We have provided some of these groups with communication devices to inform law enforcers if they detect suspicious legal fishing activities.

This joint effort has resulted in both the increased awareness of some local fishers of legal methods of fishing and decreased illegal fishing practices by outside fishers. A senior official noted:

> The awareness of the local fishers has increased. If they unintentionally catch sea turtles or dugongs, they will let them go. They have complied with regulations about protected fisheries and marine resources. They have also taken direct action against illegal fishing. There is an acknowledgement from the Fisheries and Marine Affairs Department, that in general fishers do not go too far to catch fish. They just catch in the nearby waters and they can bring home

> sufficient catch. But, honestly, I do not know the exact figure (Interview with the former Head of the Tourism Promotion Division at the Tourism Department).

The unit, according to several media reports and as echoed by several interviewees, has successfully detained and sanctioned some illegal fishers in the Sawu Sea MPA because of information provided by local fishers.

> We have our patrol team in the Sawu Sea MPA. If outside fishers are undertaking fishing in the indigenous and traditional zones, we will detain them (The NMU-MPA staff member).

> There is [illegal, unreported and unregulated fishing] but not as much as it used to be. The Navy and the Police [members of the Provincial Conservation Forum] have repeatedly caught fishing vessels in the NTT, which did not have proper permits (The NMU-MPA coordinator).

However, the fact that the unit is operated only at the provincial level, despite the large-size of the MPA, has proved ineffective in many cases. The unit has undertaken surveillance but in unsystematic ways that have been partial and incidental. It tends to take actions based on the reports of fishers but in many cases, the unit cannot make the quick response its name implies because of the large-size of the Sawu Sea MPA. According to some interviewees, the unit arrives at the scene after illegal fishers have gone; or they may play 'cat and mouse' games with the unit (Interviews with Head of Rote Economic Bureau and a senior official of FAO).

Since its establishment in 2014, the District Conservation Forum has intensified monitoring and marine surveillance within the Sawu Sea MPA. Like the provincial governments, the district governments work closely with the navy, and police to enforce the law against criminals and impose penalties on them. Therefore, the membership of the forum includes these law enforcers. The forum daily coordinator emphasised the reason for having law enforcers as members of the forum:

> Since the beginning [the establishment of the Sawu Sea MPA in 2014], we have involved customary fishers in undertaking monitoring and supervision. We have also involved the police, the navy and *manahoro* because we do not have formal authority [in law enforcement] but we have financial resources to support them.

The adoption of customary rules has improved law enforcement and compliance. The District Conservation Forum, together with other stakeholders, has worked with customary figures to raise the awareness and compliance of local fishers regarding fisheries conservation. The forum has undertaken several activities to revitalise and adopt customary rules for fisheries management in coastal villages on Rote Island because of its benefits for conservation. Some senior officials at the district government acknowledged the improved law enforcement, which has arisen from the adoption of customary rules and practices:

> There was a case where a local fisher who had a sea turtle was fined according to customary rules (The Secretary of Fisheries and Marine Affairs Department).
>
> In Nggodimeda village, a villager was fined for mining sand on a large-scale and using modern equipment (The Head of the Economic Bureau).

The impact of customary rules on local fishers differs from that of outside fishers. While customary rules are more effectively implemented among local fishers than outside fishers, the reverse applies to formal rules. Formal rules are more effectively imposed on outside fishers than on local fishers. This difference is due to the difficulty local communities and law enforcers have in monitoring and enforcing the customary law on outside fishers, due to limited marine transport, safety and other risks, which are not significant difficulties for formal law enforcers. Thus, formal and local rules complement one another in law enforcement. The Head of the Economic Bureau elaborated on illegal outside fishers and the difficulty that local fishers have in enforcing customary rules on them:

> Illegal fishing activities by outside fishers are decreasing, but they are often still operating in nearby marine areas. Fishers in Boni Village, for example, have detected their activities but due to limited facilities and resources, they cannot exclude or force them to submit to the law. Local fishers worry about possible risks from approaching them.

Under *hohorok*, *manahoro* are responsible for enforcing it, including imposing sanctions on violators. With the revitalisation of *hohorok*, the *manahoro's* roles have continued to be the same as when hohorok was practised in the past. In undertaking their responsibilities, *manahoro* do not have difficulty enforcing the law on local fishers because fishing activities are easily monitored, but

manahoro do have difficulty with enforcing the law on outside fishers. *Manahoro* who were interviewed indicated that the law has not been effectively enforced due to the lack of resources:

> During a meeting with the District Conservation Forum, we asked for resources to undertake monitoring and supervision. We cannot enforce the law because we do not have proper seaworthy boats and equipment to monitor the area (*manahoro* in Oelua village).

> In 2015, we knew that there was illegal fishing by outside fishers in the nearby waters using blasting. We knew after finding dead floating fish on the beaches. However, the perpetrators had gone by the time we knew. We lack capacity to undertake monitoring (Coordinator of *manahoro*).

Despite the difficulty of law enforcement for outside fishers, this does not eliminate the significance of *manahoro*. Law enforcement applied to local fishers is important because their fishing activities contributed to fisheries depletion. Historically, local fishers had little impact on fisheries, but they have gradually learned about destructive fishing methods, particularly blasting fishing, from outside fishers since the 1970s. The coordinator of *manahoro* confirmed:

> Local fishers have learned from outside fishers [in undertaking illegal fishing activities]. They did not practice blasting and poisoning fish before the arrival of outside fishers [and Bajo fishers] who introduced these fishing methods in the 1970s. Thus, both local and outside fishers contributed to fisheries depletion. But I think it has been the outside fishers who contributed the most to fisheries depletion.

Law enforcement, however, is undermined by the lack of integrated programmes across the different tiers of government in support of customary fishers. The district government, which has no marine jurisdiction, for example, has supported *hohorok* by building alternative livelihoods for customary fishers. In Oelua, for example, the district government provided livestock for fishers but due to a lack of food for the livestock, the fishers take the leaves of protected mangrove trees to feed the cattle. The district government's programme to provide alternative livelihood activities for fishers can lead to the depletion of the mangrove forest that is protected under *hohorok*. A *manahoro* in Oelua elaborated on this problem:

> It is a violation of *hohorok* rules. We [*manahoro*] have discussed this problem. We agreed that as long as the people only take the leaves of mangrove to feed their livestock, then it should be all right. It will

> destroy the forest if they cut down the trees. However, in the long run and if the district government provides more livestock, it can destroy the trees. And, it is hard to take the leaves without cutting the mangroves.

On the whole, law enforcement has improved following the establishment of the Sawu Sea MPA. The management bodies at all government tiers have worked closely with law enforcers to undertake surveillance and enforce the law. This effort has resulted in decreased illegal fishing. Similarly, the establishment of *hohorok* has prevented illegal fishing by local fishers, although there were still reports of illegal fishing by outside fishers. However, the decline in illegal fishing might relate to the policy of the national government in general, which has taken strict action against illegal fishers since 2014. The national government's policy and increasing surveillance in the western part of the country, discourage, the entry of illegal fishers from neighbouring countries.

7.7 Jurisdictional scope

Jurisdictional scope in this study focuses on the geographical domain of the management bodies. The domain influences the management bodies' capacity to achieve their goals and to apply CFM within the Sawu Sea MPA. Overall, the geographical domain of the management bodies is determined by the ecosystem approach to fisheries management. However, the application of the ecosystem approach at the provincial, district and community levels does not solve the institutional misalignment that the national government aimed to address. This has complicated the application of CFM.

At the national level, according to Decree 23/2008, the working area of the management body (NMU-MPAs) covers sixteen MPAs across twelve provinces in Eastern Indonesia (see Figure 4.3). As the Coral Triangle Initiative Support Programme (Duanto, 2015; Kaha, 2015) noted in its 2011 report, these MPAs possess diverse socio-ecological characteristics, and together they serve as the ecosystems for many migratory fisheries. This ecosystem approach enables the NMU-MPA to address overlaps and gaps in managing fisheries.

However, a senior official of FAO commented during an interview that the NMU-MPA faces great challenges that have shaped its efforts to manage MPAs, coordinate sub-national government partners and apply customary fisheries. The following interviewees acknowledged that the NMU-MPA's responsibilities are not matched with the supporting resources:

> Given the size of the protected areas and because it shares boundaries with other countries, the Sawu Sea MPA is managed nationally. But I think the responsibility of the NMU-MPA is much greater than supporting resources, especially human resources. We are managing 16 MPAs in 12 provinces in Eastern Indonesia, including the Sawu Sea MPA. The geographical areas influence management costs (The NMU-MPA staff member).

> [There are] too many [marine areas] to be managed and local partners to be coordinated … All MPAs have a diversity of fisheries practices and we have to adjust to the diversity … We try our best to carry out the programmes in accordance with the characteristics of their business. But this is not an easy and costly job particularly in reconciling conflicting fishing practices such as the case with Lamalera fishers. The negotiation cost is very high (The NMU-MPA coordinator).

The NMU-MPA works with other stakeholders across the region to address these challenges. The NMU-MPA coordinator emphasised that one challenge is to assure a fair distribution of resources across geographical areas in order to strengthen collaboration with and among fishers. As he noted, there are many units of provincial and district governments and millions of customary fishers that are scattered among thousands of islands within its jurisdiction. Therefore, the NMU-MPA sets priorities for its programmes to work with customary communities. However, the NMU-MPA coordinator acknowledged fishers have raised some difficulties in addressing social challenges across the MPAs:

> Indeed, there are voices [customary fishers] that we [the NMU-MPA] have never paid attention to them; that we forget to empower customary fishers in some islands who mostly involve in marine culture [seaweed growing]. Well, it is impossible … to serve all the fishers at once. We set priorities because the government's funding is not only to finance conservation projects in the NTT but also in other provinces. But I acknowledge that we might have overlooked some fishers. There are millions of fishers in thousands of islands. It is difficult to meet their needs adequately.

At the provincial level, the geographical domain of the management body (the Provincial Conservation Forum) is significantly smaller, although it covers the

entire marine area of the Sawu Sea MPA, it does not cover the full marine area of the whole Sawu Sea. It comprises only ten districts out of the twenty-two districts in NTT and these have different practices of customary fisheries management. This jurisdictional scope influences the extent to which CFM is applied and the funding and harmonisation of policies at different tiers of the government, creating conflicts among communities within and beyond the Sawu Sea MPA.

The entire Sawu Sea MPA encompasses over 3 million ha and is divided into different zones for different purposes. The zones are:

- Core zones for protection of fisheries and for research;
- Utilisation zones for marine tourism and research;
- Sustainable fisheries zones comprising general zones for commercial fisheries, traditional zones for small-scale fishers and cetacean protection zones of migratory fisheries; and
- Other zones include the indigenous zone and tourism and marine culture zones (MMAF Decree 6/2014).

The size of marine zones for customary fishing and for protecting traditionally managed marine areas, known as the *indigenous zone*, is about 0.02% of the Sawu Sea MPA (MMAF, 2014a, p.82). In these zones, *Hohorok* (or *Papadak*) on Rote Island was identified in Decree 6/2014 as one example of CFM practices to be adopted. However, as shown in Figure 7.5, the size of the indigenous zone within which customary fishers implement CFM is one of the smallest whereas, the size of the marine area for commercial fishing is over 40% of the entire Sawu Sea MPA.

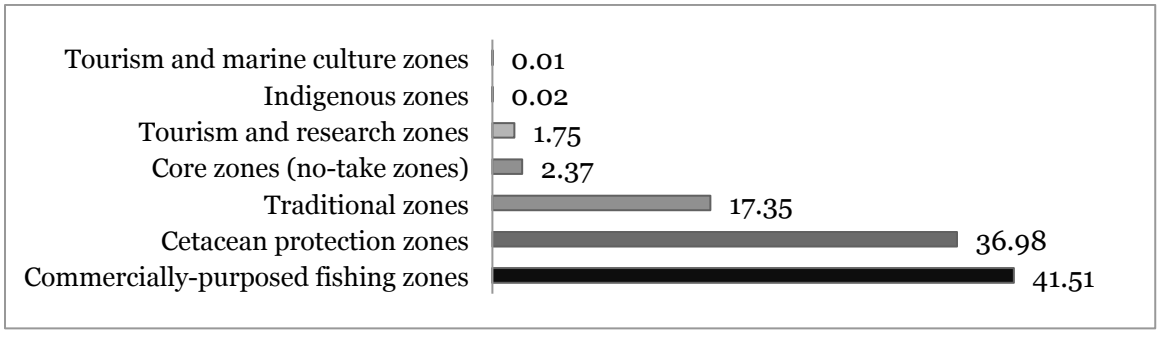


Figure 7.5: Size of marine zones of the Sawu Sea MPA (%)

Source: MMAF (2014, p.82)

The physical characteristics of the large archipelagic province influence the priorities of the forum in empowering customary fishers. Some senior provincial government officials at the Fisheries and Marine Affairs Department highlighted the high operational costs for deployment, transportation and meetings, and the increased responsibility of the provincial government following the change in the marine jurisdiction, as established by Law 32/2014. The Secretary of the Development Planning Agency echoed the view of the other officials, "the archipelagic characteristic costs more for transportation, particularly airfares. It's cheaper if we can drive or go by public buses". A fisheries official added that a significant amount of the forum's budget goes towards transportation and accommodation costs, reducing the budget to be allocated for activities related to empowering customary fishers.

A significant challenge for the Sawu Sea MPA's management is the coordination costs incurred in harmonising policies across tiers of the government. The exclusion of the district governments from managing fisheries and marine resources, as specified in Law 23/2014, solved previously fragmented fisheries management under decentralised management (see Chapter 4). This policy enables the management of the entire ecosystem within the Sawu Sea MPA to be under one authority, reflecting the ecosystem approach to fisheries management. However, the policy requires the national management body to take initiatives and bear coordinating costs, such as holding meetings and undertaking public consultation.

Unfortunately, the exclusion of district governments from fisheries management has decreased their incentive to support the Sawu Sea MPA in managing land-based activities along coastal areas, which fall under their jurisdiction. Activities in the coastal areas do not come under the fisheries regime, but they can produce spill over impacts that affect fisheries and marine resources. At the same time, the revised Provincial Regulation 1/2011, *Provincial Spatial Plan* (Article 1) allows business activities in the coastal area. In the previous *Spatial Plan*, as specified in Article 52 of Provincial Regulation 9/2005, business activities in the coastal area were not allowed. This change has resulted in increased construction of hotels on many coastal areas and many

protests by customary fishers in NTT province, due to the denial of the fishers' customary rights over coastal resources (Angrian, 2917; Bere, 2016b).

This exclusion of the district governments from fisheries management has produced conflicts among local people over marine zones within the Sawu Sea MPA. The policy of the provincial government attempted to gain Rote Ndao district support, but their efforts led to further conflicts. The Head of the Marine Conservation Section at the Provincial Fisheries and Marine Affairs Department acknowledged that in order to build the ownership of the Rote Ndao district government, the forum supported existing tourism zones that had been established by the district government, despite its proximity to the indigenous zone, especially mariculture zones (see Figure 4.3). As a result, a local seaweed grower in Nemberala confirmed that the proximity of tourism facilitates to mariculture zones causes problems, such as pollution from tourism activities, marine sports and transport, drifting into his zone (personal communication). Pollution influences the health and growth of seaweed. Thus, the Sawu Sea MPA zoning resulted in both vertical conflicts across tiers of government and horizontal conflicts among community groups.

The change to the marine jurisdiction has resulted in an increased burden for the provincial government and local fishers regarding public services. Following the transfer of authority for fisheries management from the district government to the provincial government, the latter needed to provide public services related to fishing activities. This change increased the costs for both the provincial government and the fishers. The change requires the fishers to go through longer procedures to get the provincial government's approval for fisheries activities. However, the provincial government does not have sufficient resources to manage its increased responsibility. Senior officials at the provincial government confirmed these challenges:

> Changes in the law 23/2014 [*Sub-national government*] for example, complicate fishing permits. Under this law, fishers should get fishing permits from the provincial government instead of the district government, as in the past. The change requires more costs for the fishers (The Secretary of the Development Planning Agency).
>
> I think the change was a step back. It put an end to the on-going development agenda that the district governments had pursued. At

> the same time, the provincial government does not have sufficient resources [to take over the new responsibilities] (The Head of the Fisher Empowerment Section at the Fisheries and Marine Affairs Department).

A member of the Provincial Conservation Forum discussed conflicts related to migratory fisheries and problems within the Sawu Sea MPA. Significant migratory fisheries in the Cetacean protection zones of the Sawu Sea MPA (see Figure 4.3) are protected from local fishers. However, these migratory fisheries are not protected beyond the Sawu Sea MPA. She argued that there is no benefit in protecting migratory fisheries if other people do not consider the impacts of their actions on fisheries and on other fishers. The Former Head of the Marine Conservation Section at the Fisheries and Marine Affairs Department stated, "We should benefit from them [migratory fisheries]. Otherwise, we just protect them for the Chinese … and the Australians". Similarly, she added, seaweed farmers in NTT suffered from the cross-boundary oil spill in 2009, but they got no compensation. These are some cross-boundary problems in the Sawu Sea MPA.

The application of CFM is similarly limited at both the provincial and national levels, due to the change in the fisheries management. The indigenous zone, where customary fishers implement CFM, is amongst the smallest zones. Despite the small size, during the initial stages in the establishment of the Sawu Sea MPA, the provincial government provided support for conservation efforts, which were shaped by its goal to take control of fisheries management in the Sawu Sea, which was then under the national government's jurisdiction. However, with changes in both the sub-national government law and in the management of the Sawu Sea MPA in 2014, when fishing communities and the NMU-MPA were favoured to manage fisheries, the provincial and district governments' support for customary fishers decreased.

At the district level, the main functions of the District Conservation Forum are to provide advice for the management of the Sawu Sea MPA and to coordinate the activities of local-level stakeholders. The legal role of the forum is limited, but it has encouraged the application of customary fisheries in the Sawu Sea

MPA. The forum, together with customary fishers, has revitalised *hohorok* in six villages (see Figure 4.3 & 6.4). As the Head of the Economic Bureau explained:

> In 2016, we reintroduced the implementation of *hohorok* in six villages. We have set the target to establish *hohorok* in all fifty-eight coastal villages on Rote Island. For 2017, we aim to revive and re-establish *hohorok* in sixteen villages.

However, the absence of marine jurisdiction prevents the district government from imposing regulatory policies on marine-based activities. To address this lack of authority, the national agencies such as the Police Department and Marine Corps are represented on the board of the forum. These agencies have authority to undertake monitoring and supervision in the Sawu Sea MPA. However, the change in the district government's marine jurisdiction authority has stopped the forum's efforts to revitalise *hohorok* in the other coastal villages within the Sawu Sea MPA. An interviewee commented:

> The provincial government manages marine areas from the coastline to 4 nm. There is no legal basis for us [the district government] to fund activities related to fisheries and marine resources management. We hope that the NMU-MPA and TNC can revitalise customary rules in the other coastal villages. Without the NMU-MPA and TNC, I do not think the forum can do it (Interview with Head of the Economic Bureau).

Consequently, the applicability of CFM at the district level has been shaped by the role of customary fishers' representatives in the forum rather than the district government. Prior to the declaration of the Sawu Sea MPA in 2009, the forum, whose coordinator serves as the daily coordinator of the RNFAC, had been actively involved in the *adat* re-establishment (see Chapter 6). Thus, the forum has re-established *hohorok* in fisheries management. However, as with the provincial government, the change in the sub-national government law has stopped, the district government from supporting the forum in re-establishing *hohorok* in the other coastal villages.

At the community level, marine *hohorok* shares similarities with freshwater fisheries *hohorok*. Marine *hohorok* is located along the coastline, managed and accessed by all community members. The *hohorok* rules vary across communities, but in general, as discussed in Chapter 6, the rules include:

- Protection of coastal zones
- Prohibition of destructive fishing methods

- Protection of endangered species such as sea turtles
- Adoption of no-entry marine zones
- Establishment of sanctions

The rules not only include activities within the indigenous zone but also activities in the coastal zones. There is an integrated approach to fisheries management. However, at the moment, *hohorok* is only implemented in two villages (Oelua and Netenaen) in the North West Rote sub-district. The other neighbouring villages in this sub-district have not implemented *hohorok*. Thus, fishers in the other villages operate under a different management regime. This difference can diminish collective actions around activities such as sand mining and mangrove logging, which have cross-boundary impacts. Some interviewees elaborated:

> We have set the target to establish *hohorok* in all 58 coastal villages on Rote Island. Initially, we established *hohorok* in six villages in three sub districts, two villages per sub district. However, there are eighteen villages along the southern coast of Rote Island that are external to the Sawu Sea MPA. The national government did not include them in the Sawu Sea MPA (Head of the Economic Bureau).

> Local fishers in neighbouring villages, such as Tolama, that do not implement *hohorok*, are free to mine sand and do other activities in their villages. *Hohorok* rules only apply to Oelua. Tolama village has not adopted it (*manahoro* from Oelua village).

The geographic boundaries of *hohorok* in Oelua are very clear. The whole coastline of Oelua, which is mostly made up of mangrove forest, is included in the marine *hohorok* (see Figure 7.6). The forest enables an accurate identification of boundaries with neighbouring villages. These boundaries, according to a *manahoro* in Oelua, aid their supervision of the marine zones to exclude illegal fishers. However, a senior non-indigenous fisher, who has several boats and employs several workers, noted both the difficulty identifying *hohorok* boundaries in the sea and that many fishers have no knowledge of these boundaries.

> We have drawn boundaries with other villages, and we have established signs along the boundaries. Thus, it is easy to identify trespassers (A *manahoro* in Oelua village).

> I did not know about details of the zoning and boundaries of the *hohorok* in the sea (The non-indigenous fisher).

A distinctive feature of the coastal zone in Oelua is its rocky and muddy beaches. These beaches serve as the ecosystem for non-migratory fisheries and marine resources. Access to these fisheries is confined to local fishers. Thus, there is an incentive to build ownership and support from local fishers, especially after local fishers have seen increased catches of fish since the implementation of *hohorok*. The changes are linked to the absence of fishing activities by outside fishers in the indigenous and traditional zones. The coordinator of *manahoro* explained:

> Fisheries here do not migrate to other regions ... We understand that sometimes they migrate. But fisheries here tend to stay on the rocky and muddy beaches under mangrove forest. [So] fishers have reported increased catches in nearby marine areas. [It is because] there are no more outside fishers in the indigenous and traditional zones since the establishment of marine *hohorok* [2016].

Figure 7.6: Coastal area of Oelua Village
Source: Anwar Idris

The application of CFM at the community level enables fishers to manage locally based marine areas. This arrangement is in line with the change in the sub-national government law. Customary fishers have full control over decision-making because there is no other official in the management body. They nominated their representatives without external intervention, and decision-making processes are open and transparent. However, CFM is limited to

hohorok; the management body does not include the non-indigenous Bajo fishers, who have a strong marine culture and ecological knowledge across countries. At the same time, indigenous customary fishers have limited resources and power to manage *hohorok*, including managing cross-boundary pollution and fisheries and excluding outside fishers.

The application of CFM by the NMU-MPA is influenced by several factors related to jurisdictional scope. At the national level, high transactional costs of managing large-scale MPAs and coordinating local officials and fishers influences the allocation of resources to support customary fishers. At the provincial level, institutional misalignment has arisen because of the exclusion of some marine areas and fishing communities in the Sawu Sea from the Sawu Sea MPA. At the district level, institutional misalignment has been created by the exclusion of the district government from managing fisheries. Finally, at the community level, challenges in applying CFM arise from this institutional misalignment because only a few villages have re-introduced *hohorok* and because of the difficulty in identifying *hohorok* boundaries when in open seas.

7.8 Summary

Seven themes are identified across all management bodies that influence the applicability of CFM. The extent of CFM applicability varies across the different themes. The extent of applicability is greater at lower-level management bodies. However, the lower the management bodies, the less authority they can exercise to apply CFM.

Resource structure, law enforcement and jurisdictional scope are the key themes that influence CFM application. The national level management body has a limited provision of resources to both manage several MPAs and coordinate local stakeholders. This limited provision of resources influences its support for customary fishers. At the community level, provision of resources empowers *manahoro* to undertake monitoring and enforce the law. Law enforcement has improved as the result of navy and police involvement in the management bodies and particularly by the commitment of the national

government to fight illegal fishers across Indonesia. However, decreased funding support by the national government has weakened law enforcement and changing jurisdictional scope resulting in several problems, such as institutional misalignment and high transactional costs, which weaken the applicability of CFM.

Overall, the establishment of the Sawu Sea MPA has led to the revival of *hohorok,* self-governing fisheries and increased commitment by the national government to fight illegal fishing. However, the decreasing support of the government at all tiers and unaddressed institutional misalignments can threaten *hohorok* applicability and efficacy.

Chapter 8 The Applicability of Customary Fisheries Management Regimes for Managing Large-scale Marine Resources on Rote Island

8.1 Introduction

This research sought to assess the applicability of customary fisheries management (CFM) principles for managing large-scale marine resources in the Sawu Sea, Indonesia. *Hohorok* – a traditional property rights regime that emphasises communal over individual property rights –was reintroduced to Rote Island in 2004 as part of the Indonesian government's efforts to align policy with the CTI, of which it is a signatory. Replacing the previous decentralised system at the district level, the national government extended *hohorok* to the wider marine environment, but at the same time the national government strengthened its own role.

However, *hohorok* on Rote Island historically had only been applied to the island's lake fisheries and to a very limited extent to coastal fisheries. Management of the large-scale marine fishery has been undertaken within the context of modern property rights regimes. Thus, the application of *hohorok* to marine fisheries is a new practice on Rote Island.

It is too soon to observe the full effects of *hohorok* on the conservation and management of the wider fisheries, but there are tensions evident in addressing the challenges of marine commons. By design, the revived *hohorok* differs from the customary one. More importantly, the revived *hohorok* struggles with managing large-scale marine commons. These tensions are exacerbated by a lack of institutional linkages and by customary fishers' lack of access to information, funding and decision-making.

In this chapter, I explore the tension around applying a traditional regime in a contemporary setting to a new resource. I then discuss the drivers for *hohorok's*

reintroduction, exploring in particular the politics of visibility. I suggest that *hohorok* was reintroduced not so much for conserving marine ecosystems and biodiversity but more to enable the Indonesian government to leverage funding from international organisations and NGOs. This goal was clear in the national government's dependence on external funding and in its unwillingness to collaborate and share power with local officials and fishers to address the challenges of large-scale marine commons. Finally, I assess the potential for *hohorok* to address the fundamental problem of marine commons and discuss factors influencing its applicability and both the practical and the wider theoretical implications of the study.

8.2 Tensions between Tradition and Innovation in the Application of *Hohorok*

Hohorok, as presented in Chapter 6, had been in abeyance for decades due to the marginalisation by the national government prior to the establishment of the Sawu Sea MPA. More importantly, *hohorok* had been mostly applied in small-scale fisheries. Thus, the application of *hohorok* to large-scale marine environments is a novel and significant departure from traditional practice. It is also being applied in a socio-economic context that is quite different to the circumstances in which it was originally used. Thus, the new *hohorok* differs significantly from the old *hohorok*.

Equitable fishing access is the main factor influencing the applicability of *hohorok* in fisheries management but the Indonesian government failed to address that in the new *hohorok*. The national government did not distribute access to fisheries inequitably among customary fishers within a community and across communities. It has treated diverse groups of communities as homogenous, although communities, according to Agrawal and Gibson (1999), are heterogeneous in nature. It did not allocate different temporal fishing rights to different groups of customary fishers, including indigenous customary fishers, within the community as the old *hohorok* did. The new *hohorok* encourages open fishing access among customary fishers; it does not address fair fishing access for customary fishers. This difference is a source of conflict

between contemporary western fisheries management and customary rules in many countries (Friedlander, 2018).

The partial re-application of *hohorok* to only some communities on Rote Island also contributed to inequitable fishing access across communities. In fact, this practice conflicts with the previous *hohorok,* where all related communities and environments were managed in order to ensure an equitable food distribution. The application created difficulties for customary fishers in addressing migratory fisheries and posed problems across different communities where *hohorok* was not re-applied. It allowed some communities free fishing access at the expense of the others. The partial application of *hohorok* created conflicts among neighbouring communities and weakened their collective action to pursue collective interests.

The national government failed to address social relations between groups within a community, which were among the other goals of the previous *hohorok* that are now missing in the revived form of *hohorok*. In reviving and managing *hohorok,* indigenous fishers are dominating decision-making although they do not have the capacity (resources and knowledge) for monitoring migratory fisheries that the non-indigenous fishers have. The Indonesian government does not involve non-indigenous customary fishers in managing *hohorok*. This suggests that a fair distribution of benefits to members of communities is not the goal of the revived *hohorok*. These findings show that the study of Lemos and Agrawal's (2006) are also applicable to the context of this study: it is difficult to distribute costs and benefits fairly in large-scale marine environments with diverse and complex socio-ecological aspects.

Significantly, the national government failed to restore the diminished trust of customary fishers in the national government, which arose from the government's denial of customary fishing practices in the previous regimes, and which contributed to depleted fisheries at the expense of small-scale fishers (Satria & Matsuda, 2004). This lack of trust diminished further from a lack of law enforcement by the government on outside fishers. The lack of trust serves as a disincentive for customary fishers to respond to the changes introduced by the government. In his study of collaboration in fisheries, Jentoft (1989, p. 173)

argues, “trust [an important element in fisheries collaboration] is dependent on fishermen’s previous relations with these organisations [the government and non-government organisations]”. Restoring trust requires continuous active efforts from the national government (Coleman, 1988; Lin, 2001), but failed to stop continuous illegal fishing by outside fishers in the Sawu Sea MPA.

Furthermore, this approach does not take into account more recent changes in the wider socio-economic structures of communities on Rote Island, which are also the characteristics of developing countries. Contextual changes such as Bajo fishers, population growth, foreign fishers, and global markets have led to an increase in overall fishing activities (see Chapter 5). Both global market demand for marine and fisheries products, and local demand for fish, coastal mangroves and sand from coastal areas have increased sharply during the last few years (Chapter 5 and 6). These factors influence customary fishers’ livelihoods, the depletion of fisheries and fish nurseries and the efficacy of local rules in managing fisheries.

This study indicates that the findings of previous studies (for example, Folke et al., 2007; Stern, 2011) concerning the roles of external drivers, such as the global market, in diminishing the applicability of local rules in managing natural resources also apply on Rote Island. This finding is unexpected because external drivers, which situate beyond the capacity of local rules, are supposed to be addressed by the CTI and/or the national government. It is difficult to address this problem, however, as there is a strong sign that the establishment of the CTI was not intended to address existing problems facing customary fishers because empowering the fishers is not the goal of the national government.

8.3 Drivers for *Hohorok* Revival

A feature of Indonesian management of the Sawu Sea MPA has been the donors and state-sponsored revival of hohorok resulting in a western-synthetic *hohorok*. Drivers for revival at the local, national and international levels include institutional changes at the global level for biodiversity management,

domestic political changes, marine conservation projects by international NGOs at the local level, and the CTI's establishment at the supranational level.

Institutional changes in biodiversity management at the global level have shaped the Indonesian government's policies toward strengthening customary practices for natural resource management (Chapter 5). International agreements and conventions for biodiversity protection, such as *the Convention in Biological Diversity* in Rio de Janeiro in 1992 and 2006, have gradually shaped domestic policies (Mulyana & Dermawan, 2008; Zakaria, 2018). These conventions prioritise biodiversity protection and also emphasise traditional and indigenous rights in natural resource management to achieve these goals. The government has, as a result, ratified several laws to protect biodiversity and the rights of customary communities in natural resources management. The two, biodiversity and customary practices have become conflated.

International agreements, particularly the 1992 Earth Summit in Rio de Janeiro, donors and NGOS projects to restore indigenous people's relationship with the nature might have been influenced by the concept of noble savages (Raymond, 2007). It is about the idyllic idea of many Europeans about a peaceful and harmonic life of indigenous people with nature, and it also serves as a critique to the modern life of the Europeans (Rowland, 2004). This concept argues that indigenous people's close relationships with the nature have been the key to keep them pure and away from corrupted civilisation and to be in line with ecological sustainability (Redford, 1990). This idea is not clearly stated in the policy documents of international donors and NGOS that involve in the establishment and management of the CTI and the Sawu Sea MPA, but *the CTI's Plan of Action* highlights keywords such as indigenous (Secretariat of Regional Coral Triangle Initiative, 2009b).

Concurrently, increased domestic pressures for political change and for an improvement of people' rights in natural resource management over the last two decades have been the main driver for strengthening customary practices (Zakaria, 2018). The national-level NGOs are among the main advocates and institutional entrepreneurs for the national government's acknowledgement of customary communities' political rights (Kosasih, 2016; Moniaga, 2004; I.

Susanto, 2013). As a result, since the 2000s the Indonesian government has passed several laws acknowledging people's rights to review laws in natural resource management that conflict with the Constitution (Kusuma Dewi & Widodo, 2018) and with the rights of communities. Notably in 2016 the president handed over certificates of ownership for managing natural resources to customary communities across the country.

At the national level, a bureaucratic agenda and bureaucratic interests have influenced the institutionalisation of customary practices for fisheries management. In response to increasing pressures to acknowledge customary rights in natural resource management, the Indonesian government has established an agency and allocated significant resources to support it. However, this agency has been working in isolation from other stakeholders in the Sawu Sea MPA and has pursued its own agenda. In studies about decentralised natural resource management, scholars (Ribot et al., 2006; Satria, Sano, & Shima, 2006) confirm that bureaucratic interests in controlling resources influence decentralised power. The national government supports efforts to establish participatory natural resource management, but the elites continue to hold key resources.

At the local level, international and national agendas have impacted natural resource management. Together with local NGOs, they have undertaken marine conservation projects for decades prior to the establishment of the Sawu Sea MPA (Chapter 4). The projects have involved customary fishers, providing them with financial and institutional support (Provincial Development Planning Agency, 2013). The NGOs have also mediated regulation changes at the local level to allow the fishers to participate in fisheries management (Rosen & Olsson, 2013). Thus, efforts to strengthen and revive customary fisheries management have been advocated at the local level for a long period.

Above all, the interests of the national government in gaining funding support are clear in the CTI where the Indonesian government aims to establish 20 million ha of MPAs by 2020 within which CFM is applied with the support of global donors (MMAF, 2014a). The CTI is not binding and provides no particular guidelines for member countries to pursue its goals, but these targets

of the Indonesian government speeds up the application of *hohorok* (Rosen & Olsson, 2013) and justify funding support from other countries and donors. The interest in the funding of global donors can be seen from Von Heland et al.'s (2014) study which noted that some member countries have difficulty engaging in the negotiation processes due to their lack of financial capacity to attend meetings. They argue that without external funding sources, member countries will abandon some planned activities. The validity of this argument was evident in 2016 when the Indonesian government decreased its support for the management of the Sawu Sea MPA due to the lack of global funding support, although doing this was inconsistent with higher-level rules.

Together, the Indonesian government can be seen to be instrumental in reinstalling *hohorok*: meeting international obligations, accessing foreign aid and defusing local protest. As elaborated below, the effectiveness of *hohorok* for addressing challenges of marine commons is not the main priority of the Indonesian government.

8.4 Effectiveness of *Hohorok* on Rote Island

At the planning stage in the establishment of the Sawu Sea MPA, the early effects of *hohorok in* addressing fundamental problems of commons have emerged. Depletion of fisheries (subtractability) and the excludability of fishers are used as the main criteria to assess the effectiveness of *hohorok* (Chapter 2). Ostrom (1990; 1999) argued that regardless of the involved property rights, the failure of a resource system to address these factors could lead to CPR dilemmas, where free-riding puts resources at the risk of overuse.

8.4.1 Fisheries depletion

Threats to fisheries depletion remain unaddressed despite the revival of *hohorok*. It might be too soon to determine whether resources are recovering because of the revival of *hohorok* in the Sawu Sea MPA. However, as discussed below, this study identifies several factors, as an institutional response across levels of jurisdictions that contributed to fisheries depletion. The factors relate to the graduated application of *hohorok*, tensions across tiers of the

government, and partial application of the ecosystem approach to fisheries management.

At the community level, control of fisheries' depletion is still difficult because the national government only initiated and applied *hohorok* to a few of the communities on Rote Island. Instead, it pushed the sub-national governments, external parties to the Sawu Sea MPA, to replicate the application of *hohorok*, which in fact both the provincial and district governments did not do. Thus, the fishing activities of communities that have not applied *hohorok* continue to have a direct impact on fisheries because of physical proximity with communities that have applied *hohorok*. This finding supports a study by Fanning, Mahon, and McConney (2009) about the impact and difficulty in addressing cross-boundary problems on the fisheries of neighbouring countries in the Caribbean Sea.

At the district level, threats to fisheries depletion arise from the Indonesian government's effort to claw back the power of decentralised fisheries management through the adoption of the CTI's goal of an ecosystem approach to fisheries management. This approach shifted fisheries management that is situated at the district level to an ecosystem approach at the national level, resulting in the exclusion of the district government and precluding it from supporting fisheries management. However, the district government continues to manage coastal areas creating problems for fisheries such as pollution and deforestation from tourism-based activities. As an external party to the Sawu Sea MPA, the district government does not have incentives to address the threat to depletion of fisheries in *hohorok* marine areas.

At the provincial level, the challenge to fisheries depletion comes from the national government's failure to adopt the ecosystem approach to fisheries management to the whole marine ecosystem. The national government did not reconcile conflicting fishing practices and compensate all customary fishers within marine areas inside the ecosystem boundaries, leaving some communities to continue fishing illegally. This policy reduced negotiation costs, but increased coordination costs of marine commons. In addition, it resulted in

inequity in fisheries access among customary fishers, diminishing their collective action (see, for example, Saunders, Gilek, & Tafon, 2019).

At the national and supra-national levels, the depletion of fisheries shares a similar problem with that of the provincial level because some neighbouring countries within the same ecosystem do not belong to the CTI. Australia is among several neighbouring countries enjoying the benefits of the Sawu Sea MPA (Treml et al., 2015). The absence of these countries from the CTI allows them to enjoy improved migratory fisheries from the Sawu Sea MPA without contributing to the costs of conserving it as customary fishers do in Rote Island.

8.4.2 Excludability of fishers

The establishment of *hohorok* strengthens customary fishers' ownership of the initiative. This can be seen from the increasing willingness of local communities to report and punish local fishers involved in illegal fishing practices. *Hohorok* can effectively exclude transgressing local fishers from the fisheries. The small size of both the environment and the community enables local people to exchange information, to supervise and enforce the law on the local people without difficulty.

Customary fishers, however, have difficulty supervising large-scale marine areas. They have limited resources to supervise marine areas, while many fishers find it too risky and unsafe to sail because the sea is rough with high waves. Furthermore, the fishers lack authority to enforce the law on large-scale fishers making it is difficult for customary fishers to exclude outside fishers. They can exclude local fishers but not outside fishers. Thus, the re-application of *hohorok* only partially solves the problem of excludability.

The effectiveness of CFM in excluding outsiders in small-scale environments is influenced by the geographical characteristics of the marine commons and by the social relationships of neighbouring fishing communities. Aswani (2011) found that in many South Pacific island states, marine environments are small and closed, which naturally facilitates excludability, and there are well-developed dependant relationships among neighbouring communities that

facilitate monitoring and law enforcement. Excludability is difficult in *hohorok* because *hohorok* does not possess these socio-ecological characteristics that Aswani found in his study of CFM in small island states in the South Pacific.

The inapplicability of *hohorok* in addressing the problems of commons in Rote Island are influenced by the existing lack of customary fishers' resources and capacity to manage local marine areas and by the inappropriateness of the national government's institutional response. However, the physical characteristics of marine commons in Rote Island, which is large and open, complicate excludability, while the proximity of marine zones and villages facilitated depletion of fisheries.

8.5 Causes of *Hohorok* Ineffectiveness in Managing Marine Commons

The difficulties of *hohorok* in controlling fisheries' depletion and in excluding fishers in marine commons have been influenced by scalar challenges of marine commons. The challenges, as discussed in this section, can be categorised into social, ecological, institutional and political factors. These factors demonstrate deficiencies across tiers of the government, hindering the effectiveness of *hohorok,* as discussed in this section.

8.5.1 *Social and cultural diversity, fairness and conflict*

Hohorok rules are based on local socio-ecological conditions, allowing rules to be compatible with the fishers' needs. The rules emphasise the need for a fit between costs and benefits for resource users within an environment. They enable fairness in the efforts and costs borne by resource users in relation to the benefits they enjoy. However, partial application of *hohorok* and the ecosystem approach to fisheries management renders this principle ineffective because the benefits are also enjoyed by outside fishers who do not necessarily bear the costs of conservation.

The other aspect is associated with a lack of indigenous ecological knowledge on the part of the fishers about large-scale marine environments. The fact that

hohorok was not applied in large-scale marine environments meant that customary fishers had no marine ecological knowledge necessary for managing large-scale marine commons. This finding is consistent with a study by Stacey et al., (2008) which found that indigenous Rote fishers possessed limited marine ecological knowledge. This justifies the national government's reliance on scientific knowledge about the Sawu Sea MPA. However, this removed autonomy from the customary community back to other holders of knowledge.

This lack of ecological knowledge also resulted from the failure to manage diversity within the community. The management of the Sawu Sea MPA tended to focus more on indigenous fishers. This has marginalised non-indigenous Bajo fishers and weakened collective action. These Bajo fishers have long practised and accumulated marine ecological knowledge useful for managing large-scale marine commons, but they were not involved in the *hohorok*. The management of local marine areas is only based on *hohorok*. This failure to manage diversity and equity issues, as studies of marine spatial planning (for example, Saunders et al., 2019, p. 15) confirm, weakens social cohesion and relationships among communities.

The Rote case shows that the way the new *hohorok* addresses the social inequity in fisheries management differs from that of the old *hohorok*. The new *hohorok* does not discriminate between different groups of customary fishers within a community as the old one did in accessing fisheries. The old *hohorok* enabled a fair distribution of fishing benefits by allocating different temporal fishing rights to customary fishers; by distinguishing between those with physical limits and highly productive fishers. Instead, the new *hohorok* established a separated marine zone for customary fishers to manage and apply CFM within the Sawu Sea MPA. The national government distinguished customary fishers from non-customary fishers in managing fisheries, but it did not address social inequity among customary fishers. Social equity, an attribute of social cohesion, according to Prell, Hubacek, and Reed (2019), can prevent conflicts within a community, which destroy collection action in managing natural resources.

The differences in the temporal scales between formal and informal rules hinder their integration and weakening *hohorok* applicability. Having had a long

period with *hohorok* in abeyance diminishes its capacity and its restoration requires a longer time than formal rules allow for. Thus, no *hohorok* have been established by customary fishers on their own initiative since the national government revived *hohorok* in 2016. Studies in other contexts confirm that while formal rules are applicable to large spatial scales and can change within a short time, informal rules apply locally and change incrementally (Hall & Taylor, 1996; North, 1990). Thus, changes in *hohorok* may need a longer time than those of formal rules and the changes require the active support of the national government to function effectively. This may explain the ineffectiveness of *hohorok* in the short run.

The limited applicability of *hohorok* in the Sawu Sea MPA is partly influenced by conflicting customary fishing practices among neighbouring communities in the Sawu Sea. This is the challenge of integrating customary practices into modern fishing management in many countries (Aswani, 2005; Friedlander, 2018). It is difficult to reconcile the conflicting practices, which justify the government decision to exclude some fishing communities that rejected the inclusion of their fishing areas within the Sawu Sea into the Sawu Sea MPA. However, the decision has produced institutional misfits in the fisheries management in the Sawu Sea. This condition differs from communities in the Pacific island nations, where there are fewer conflicting practices in applying CFM in large-scale marine environments (Aswani & Hamilton, 2004; Cinner & Aswani, 2007). The diversity of socio-cultural norms among fishers and the geographic characteristics of marine environments shape the applicability of CFM in large-scale marine environments.

8.5.2 *Ecological and physical scale*

The physical characteristics of large-scale marine environments influence *hohorok* applicability. *Hohorok* works in small-scale marine environments as shown by the example of Oelua, but *hohorok* boundaries are unclear in the large-scale marine zones. The management bodies established *hohorok* within the indigenous zone based on the village's coastal and marine jurisdiction. The fishers have no problem identifying boundaries using coastal vegetation, landscapes, and artificial signs. However, at the sea, there are no recognisable

signs for fishers to identify the boundaries with neighbouring communities and other marine zones. Thus, *hohorok* inapplicability resulted from the physical characteristics of the marine environment that did not enable customary fishers to clearly establish the boundaries of marine *hohorok* in large-scale marine commons.

The complexity and dynamics in the spatial scale of marine commons, for example, facilitate problems associated with cross-boundary pollution and migratory fish from neighbouring villages, land-based activities and other zones. The adjacency of marine zones within the Sawu Sea MPA makes it difficult for customary fishers to address these problems; such problems are the responsibility of different jurisdictions. This finding supports Edgar et al.'s (2014) study of MPAs in Australia that found that due to the characteristics of marine environments, an isolation of no-take zones from fishing activities is a key to successful MPAs. Thus, establishing clearly defined boundaries for marine zones does not necessarily facilitate effective *hohorok* because of cross-boundary problems.

Beyond the Sawu Sea MPA and the CTI, the adjacency of Rote Island with neighbouring countries and international waters complicates *hohorok* applicability. For example, the 2009 oil spill along the border water of Rote Island and Australia resulted in widespread damage to seaweed farming for customary fishers on Rote Island. Fishers have not been compensated, although the national government has sought compensation since 2013 from the perpetrator. This is an example of the strong dependence of customary fishers on the government, across tiers, in managing large-scale marine environments.

However, this geographical location of the Sawu Sea might have influenced the strategy for law enforcement on outside fishers by the national government. The fact that Sawu Sea MPA is located in the southern part of Indonesia, while outside fishers mostly come from South East Asian countries (see Chapter 5) in the northern part of the country can be an explanation for the lack of law enforcement. The national government has taken strict action on these illegal fishers over the last few years, resulting in increased improvement of fisheries in some regions in Indonesia. This might be possible due to the migratory nature

of fisheries, which can benefit customary fishers in the Sawu Sea MPA. This suggests that locally based law enforcement is not the only key to fisheries improvement in the Sawu Sea MPA.

8.5.3 *Institutional and policy discrepancy*

The discrepancies within laws and an absence of institutional linkages between the community-level management body and the higher-level management bodies have all influenced the implementation of *hohorok*.

Discrepancy within laws

At the village level, there is no operation rule enabling customary fishers to access the decision-making by the village government in managing natural resources. This absence does not enable the village government to address a fair distribution of benefits across groups of fishers in a community. The national government has devolved significant power and resources to the village government, but it has not enacted any operational rules to clarify the village governments' responsibility to empower local institutions. As a result, none of the village governments on Rote Island have established village laws clarifying customary fishers' rights in natural resource management. There are discrepancies within the laws of the national government. This finding supports previous studies (Antlöv et al., 2016; Clement, 2009; Purwanto & Pramusinto, 2018) about the lack of commitment of the national government to strengthen communities in natural resource management.

This discrepancy between laws also exists at the district level. The district government's lack of support for customary fishers is due to the gap in the laws between constitutional law passed by the national government and operational law passed by the district government to give effect to the former. As established by the Constitutional Court of Indonesia (2012), the district government needs to establish a local law clarifying the fishers' rights in fisheries management (AMAN, 2016a). Thus, since 2013, the national government has encouraged district governments to enact such customary law (Burhani, 2013). However, the exclusion of the district governments from managing the Sawu Sea MPA has served as a disincentive for the district government. The absence of this local

law inhibits the district government from supporting customary fishers in the Sawu Sea MPA.

A lack of institutional linkages

Beyond the village level, the applicability of *hohorok* suffers from a lack of institutional linkages to higher-level management bodies, making it difficult for the fishers to access decision-making. The fishers have insignificant roles in the higher-level management bodies; decision-making at these bodies relies on dialogue and consensus, complicating the ability of fishers' representatives to influence it. There is uncertainty in the meeting arrangements and problems of language and communication. These problems restrict fisher representatives from attending meetings and voicing their concerns to authoritative organisations and responsible officials.

The fishers' difficulty in accessing decision-making is also due to the limits in information provided by and for customary fishers. The management bodies provide information about the Sawu Sea MPA through several media and methods that the fishers cannot access. The management bodies prioritised the government at all tiers rather than the fishers. This confirms studies by Gorris et al., (2019) in fisheries governance in Indonesia about the "dark side" of the NGOs and by Ribot (2002, 2005) who found that management prioritise upward accountability rather than downward accountability.

The fishers' lack of roles in providing information does not improve their understanding and knowledge about the conservation outcomes. Katon et al. (1997), for example, found that in many countries, the fishers involvement in providing information and monitoring increased their awareness of both threatened resources and incentives for supporting conservation. The national government, however, relies on experts for information about fisheries, instead of integrating CFM with formal management leading to a failure to integrate local knowledge with scientific knowledge.

The lack of institutional integration is reflected in the separate management regimes for managing the Sawu Sea MPA. Only the national government and customary fishers have jurisdiction in the Sawu Sea MPA; the provincial and

district governments simply play coordinating roles, without any jurisdictions. However, the decision-making of higher-level management bodies is separated from that at the community level. Young (2006, pp. 5-6) labels this institutional design as *separation* to refer to regimes across levels that "operate in separated jurisdictions with clearly defined spatial boundary and authority". This finding supports Clement's (2009) study about previous decentralisation policy in Indonesia where the national government focused more on a once-off power sharing policy than on a continuous institutional building and partnership as scholars suggest (Hauck & Sowman, 2001; Pomeroy, Cinner, Nielsen, & Andrew, 2011) and Indonesian law requires.

8.5.4 *Political and economic aspects*

Above all, the national government's unwillingness to share power and resources with customary fishers, as required by the national laws for management the Sawu Sea MPA, is the key impediment to the failure of *hohorok*. There is a substantial discrepancy between the policy and practice of the national government. This was found in previous studies (Clement, 2009; Purwanto & Pramusinto, 2018; Zakaria, 2018) about the lack of commitment from the national government to strengthen communities in natural resource management. Instead, the national government has relied on the district government to involve groups of customary fishers in conservation, but the district government is now an external party to the Sawu Sea MPA. The national government has avoided committing itself with customary fishers, reflecting a kind of free-riding behaviour.

The interest of the national government has shaped the changes it made to the jurisdictional scale at which fisheries are managed. Prior to the establishment of the Sawu Sea MPA, the Indonesian government had decentralised fisheries management to district governments, but this had led to increased exploitation of fisheries, the marginalisation of customary fishers and fragmented fisheries management (Satria, 2004). This explains the national government policy to recentralise fisheries management. However, as Ribot (2005, p. iv) found from studies of decentralisation in many countries, the national government controls power by delegating authority to "non-representative local institutions" and "by

choosing local institutions that serve and answer to central interests" (Ribot et al., 2006, p. 1865). The national government, as scholars have found in many developing countries (Ribot, 2005; Ribot et al., 2006), established political decentralisation, but it did not establish fiscal decentralisation. This may explain the lack of support for customary fishers and their dependence on the national government in managing *hohorok*.

In addition to the changes in the jurisdictional scale for managing fisheries, the national government's choice of spatial scales for applying an ecosystem approach to fisheries management is related to its effort to control economic costs from negotiation. As Imperial (1999, p. 452) argues, an ecosystem approach aims at "changing institutional arrangements and improving coordination between the organisations", incurring significant costs. Thus, at the provincial level, the national government excluded some marine areas within the Sawu Sea, where fishers in these areas adopt conflicting fishing practices.

This study confirms previous studies (for example, Araral, 2014; Evans & Klinger, 2008) conclusions about transactional costs such as information and coordination costs in the CTI due to the increased number of different participants. However, as a result, this decision diminished not only collective action, but, as several studies (for example, Berkes, 2006; Brown, 2003a; Folke et al., 2007) point out, it is difficult, if not impossible, for customary fishers to enforce the law and exclude non-local fishers, as well as manage fishing quotas and cost-benefit sharing. The national government achieved its interests at the expense of customary fishers.

There is an expectation of the Indonesian government to gain funding support from international donors through the establishment of the CTI and the pursuit of its goals, including *hohorok* re-application. This expectation was based not only on the argument that fisheries conservation has global benefits, but also because most CTI member countries lack financial and institutional capacity. Clifton (2009) highlights the availability of funding support, which is only about 30% of what is needed for managing the CTI for the first decade. Von Heland et al. (2014) found that some member countries have difficulty engaging in the

negotiation processes due to their lack of financial capacity to attend meetings, and hence they will not commit to pursue the CTI's goals. The member countries do not see the CTI's goals as their priority; instead it has been left to the international donors and NGOs to shape their involvement (Asia Development Bank, 2011). Accordingly, they rely on the assistance of international donors to establish the CTI and pursue its goals. This helps explain the decrease of the Indonesian government support for fisheries management in the Sawu Sea MPA after it failed to maintain funding support from international donors.

The decrease of the Indonesian government's support for customary fishers could reflect its view about the insignificance of customary fishers within the Sawu Sea MPA. At the planning stage, the national government's interests in external funding support have shaped the establishment of the CTI and the Sawu Sea MPA more than its concern for empowering customary fishers. This is supported by Fidelman's (2014) study about the lack of local actors and local fishers' roles in the CTI. In pursuing the CTI's goals, the national government included the whole Sawu Sea into the Sawu Sea MPA, the largest MPA within the CTI, manifesting its perspective about the lack of the Sawu Sea's role for national economy and for customary fishers compared to other marine regions in Indonesia (Chapter 5). Scholars argue that this strategy indicates a residual placement, where governments tend to conserve marine areas with less significance for economic interest (Joppa & Pfaff, 2009; Rodrigues et al., 2004).

These findings suggest that the inability of *hohorok* to manage marine commons is shaped by deficiencies in social aspects - such as fairness in the fisheries distribution and the lack of the fishers' ecological knowledge of fisheries in large-scale marine environments - and the ecological characteristics of local marine environments, such as the adjacency of marine zones, which facilitate cross-boundary problems. However, the Indonesian government's pursuit of global funding support for conservation has been its focus since the establishment of the CTI. This focus shaped the Indonesian government effort to claw back power from the district government and devolve it to customary communities, which have been marginalised and weakened during previous regimes. Thus, by design, the Indonesian government did not aim to build

hohorok applicability. Instead, it used marine conservation and *hohorok* revival as justifications to gain global funding support.

8.6 Practical Implications of *Hohorok* Revival

This study has practical implications for Rote fishers and for Rote Island, for the Sawu Sea MPA, for the Indonesian government and the CTI. At the local level, the implications relate to addressing external problems and fishers' lack of access to decision-making. At the Sawu Sea MPA level, the implications relate to the conflicting fishing practice, the incompatibility between costs and benefits the fishers share, and diminished collective action among customary fishers. At the national and supra-national levels, the implications are associated with diminished collective action across tiers of the government and the lack of funding support from international donors.

Hohorok re-application has failed to address the issue faced by Rote fishers in managing local marine commons. They have autonomy over local marine areas and fisheries, but inherently they lack capacity to manage them, particularly monitoring the state of fisheries. At the same time, they have difficulties dealing with external problems such as pollution. Thus, depletion of fisheries will continue to be an unsolved problem in local marine areas.

The implementation of separated management regimes within the Sawu Sea MPA implies that customary fishers manage *hohorok* in isolation from other regimes. The exclusion of the provincial and district governments from having jurisdiction means that customary fishers now have no access to decision making and support from these levels of government. Similarly, the fishers cannot access decision-making at the national government level to ensure its long-term commitment to support them in the Sawu Sea MPA, particularly after the national government's decision to decrease its funding support for the Sawu Sea MPA.

These findings suggest that Rote fishers continue to be the least empowered party in managing marine commons. This supports studies of conservation in many developing countries (for example, Balmford & Whitten, 2003) that found

that local people pay for conservation, with no certainty of receiving benefits. These findings also imply that fisheries management on Rote Island cannot be managed in isolation from external factors; they need to be managed in collaboration with higher-level management bodies.

Within the Sawu Sea MPA, the partial application of the ecosystem approach to fisheries management implies that customary fishers continue to adopt conflicting fishing practices. The Lamalera fishers whose traditional fishing grounds are excluded from the Sawu Sea MPA continue to hunt whales, which are protected by customary fishers under *hohorok*. This policy suggests that customary fishers within the Sawu Sea MPA will not enjoy the benefits of conservation; outside fishers enjoy the benefit of conservation at the expense of customary fishers within the Sawu Sea MPA.

In the long term, the partial application of the ecosystem approach to fisheries management will diminish the fishers' compliance with the rules. The fishers within the Sawu Sea MPA will lose their incentive to protect fisheries because the conservation benefits other parties. Instead, they will pursue their own interests at the cost of the whole ecosystem. As a result, the challenges of managing cross-boundary pollution and migratory fisheries that require a strong collective action among customary fishers remain unresolved.

The application of the ecosystem approach to fisheries management, a goal of the CTI, has diminished collective action among tiers of the government. The approach provided a justification for the Indonesian government to claw back control over decentralised fisheries management. The Indonesian government recentralised fisheries management to place the management of fisheries in line with the ecosystem boundaries strengthening its power and thus marginalising sub-national governments. The CTI's goal does not only bring more benefit for the national government than for sub-national governments and local fishers, but it also weakens collective action across the tiers of government in managing fisheries.

8.7 Wider Implications of the Revival of *Hohorok*

The unsuitability of *hohorok* to manage fisheries within the Sawu Sea MPA has significant implications for state and supra-national resource management regimes and marine protected areas. It also has implications for Ostrom's (1990) institutional design principles and her (2011) institutional analysis and development framework.

8.7.1 State and supra-national regimes

The challenges of managing the marine commons surrounding Rote Island are consistent with findings of previous studies (for example, Berkes, 2005) about the difficulties associated with large-scale marine commons for governing systems whether local level, state or supra-national regimes, or for a combination of all three. Rather, the challenges of marine commons are particularly about managing cross-scale linkages such as pollution and migratory fisheries, which require a multi-scalar institutional arrangement (Lemos & Agrawal, 2006; Moss & Newig, 2010).

The case of Rote Island supports previous studies (Acheson, 2006; Hardin, 1998; Ostrom, 1990) that there is no superiority among different management regimes, particularly between state and communal regimes. Instead, each regime is suited to different circumstances. While *hohorok* may be ineffective in managing large-scale marine commons, it is partly effective in managing local-level marine commons. By design, the partial applicability of an ecosystem approach to fisheries management in the Sawu Sea MPA and the CTI suggests that the state and supra-national regimes have limitations when managing challenges of large-scale marine commons, confirming a similar study by Treml et al. (2015). The state and supra-national regimes are ineffective at local-level coastal commons, but they are only partly effective at large-scale marine commons.

The results of this study indicate that the larger an ecosystem boundary and the higher the number of participants, the harder it is for state regimes to reconcile participants' interests. The conflicting fishing practices among communities within the Sawu Sea led the Indonesian government to exclude some marine

areas in the Sawu Sea from the Sawu Sea MPA. The exclusion helped in reducing negotiation costs for the Indonesian government, suggesting that costs limit the applicability of state regimes. However, it implied that the state regimes shifted the costs to the fishers creating unequal cost and benefits sharing among them. This finding supports previous studies (Davis & Ruddle, 2012; White, 1996) about the misuse of power-sharing initiatives by many governments and donors to shift costs of management to local people. Similarly, important is that this policy led some fishers to enjoy improved migratory fisheries from the Sawu Sea MPA without necessarily bearing the costs of protecting them.

The challenges for the state regimes in successfully managing marine commons remain unresolved, even when fisheries are managed under the same management regime. It is difficult to establish all the cause-effect relationships between the degradation of marine resources and management regimes due to the multi-scalar characteristics of marine ecosystems. The Rote Island case demonstrated that it is possible to identify point sources of pollution from neighbouring marine zones, but there are diverse non-point sources of transboundary problems across temporal scales with lasting impacts on fisheries. These multi-scalar problems not only render communal and state property regimes ineffective, but they have also, as Mitchell (2003) found, contributed to the failure of many global environmental initiatives.

The findings of this research support Young's (2002) study that changes in the level at which the state manages natural resources does not necessarily overcome challenges for natural resource management because there are cross-ecosystem problems. The CTI's goal of applying an ecosystem approach to fisheries shifts the administrative borders from the district to national borders but the change does not remove the borders of an ecosystem. The land-based management of the provincial and district governments, which now are external parties to the Sawu Sea MPA but continue to have a great impact on the marine ecosystem where *hohorok* is applied. This suggests that even a full application of an ecosystem approach to fisheries management cannot be effective, as it does not address problems beyond the marine ecosystem.

The difficulty in understanding the dynamics and complexities of marine commons across temporal and spatial scales contributes to the difficulty of both state and supra-national regimes in addressing the problems of commons. Galaz et al. (2012, p. 82) maintain that cross-scale "interactions are at present not well-understood scientifically; they are difficult to match or 'fit' institutionally due to their multilevel (local–global) interactions". Cash et al. (2006, p. 4) argue that institutional responses tend to focus on "a single, correct, or best characterisation of the scale and level challenge that applies to the system as a whole or for all actors". This is confirmed in the Sawu Sea MPA, where both the terrestrial ecosystem and the marine ecosystem influence the applicability of *hohorok*.

The Rote Island management regime demonstrates that the challenges of marine commons are so complex that governing marine commons is not simply about finding a property rights regime that does the job better. Rather, it is more about establishing multi-scalar institutional linkages within which different regimes and levels contribute to fisheries management. However, while there is a lack of understanding about effective arrangements, resulting in, among other things, the marginalisation of particular regimes and stakeholders, the scalar choices that were made by the national government were often to serve its interests, instead of addressing the problems of marine commons.

8.7.2 Marine conservation as ocean grabbing

The establishment of marine protected areas, particularly large-scale ones, in Indonesia has been shaped more by the Indonesian government's priority about conservation and interests in fisheries management than local actors and people (Fidelman et al., 2014; Von Heland et al., 2014). Its priority is obvious in the previous failed effort to include the whole Sawu Sea in the Sawu Sea MPA and the failure of the Sawu Sea MPA to consider different social aspects practiced by customary fishers. The new synthetic *hohorok* in Rote Island, for example, failed to discourage particular parties within customary communities from pursuing personal interests in extracting fisheries; it also does not address the equitable distribution of fisheries. It created limited open-access fisheries

within the community at the expense of marginalised groups, such as the elderly and people with disabilities, within the communities.

The western-synthetic customary fisheries management approach gained the support of customary fishers, but it marginalised existing values and practices of customary communities over fisheries. Its re-application has facilitated the national government to gain customary fishers' consent to establish marine conservation and regain control over decentralised fisheries. The establishment of the CTI and the Sawu Sea MPA can be seen as legitimate efforts to allow the national government to regain its hegemony at the expenses of customary communities.

Above all, the apparent aim of the national government is to maintain its hegemony over the fishers. The difficulties customary fishers face in governing the fisheries are understandable given the complexity and dynamics of marine environments, resources and resource users. Accordingly, these difficulties can justify government intervention. However, as Song et al. (2018) found in New Zealand, continuous marginalisation of indigenous fishers happened in a governable fishery. Davis and Ruddle (2012) highlight the betrayal by the national governments and donors in many countries to small-scale fishers when initiating conservation. Instead of sharing conservation costs, the national government and international donors delegate the costs to small-scale fishers by limiting fishers' fishing access, but they continually dominate decision-making in the name of co-management. In other cases, using the interactive governable framework (Bavinck, Chuenpagdee, Jentoft, & Kooiman, 2013) and a Gramscian approach (Levy & Egan, 2003), Song et al. (2018) identify intentional efforts of the government to marginalise small fishers through privatisation and marine conservation.

These 'ocean grabbing' policies have shaped fisheries management in many countries. The variety of marine zones in the Sawu Sea MPA, such as no-take-zone and eco-tourism zones, and changes in the property rights of fisheries, are all in line with that of Bennett et al.'s (2015) work. All these policies result in dispossessing fishers from managing fisheries and making ways for a legitimate privatisation of fisheries. On Rote Island, for example, the establishment of the

eco-tourism zones encourages more visitors, but it resulted in increasing pollution on the nearby seaweed farming under *hohorok*. In the name of raising its revenue from the tourism business, the national government sought the approval of small-scale fishers to limit their marine access for the sake of commercial tourism activities, but this effort resulted in the marginalisation of small-scale fishers. This 'ocean grabbing' occurs with the approval of small-scale fishers.

8.7.3 Ostrom's (1990) institutional design principles

Although it is tempting to assess *hohorok* against Ostrom's (1990) institutional design principles, there are significant differences and similarities between the two, particularly in managing marine environments. The differences can imply that Ostrom's design principles do not cover all institutional characteristics of local rules required for managing marine commons, while the similarities might suggest that Ostrom's design principles are applicable, but they are not present in *hohorok*.

Hohorok shares several characteristics with Ostrom's principles in creating strong collective action within the communities; thus, *hohorok* was effective in excluding local fishers. These characteristics include the size and boundaries of the environments, costs-benefit sharing arrangements, provision of information, rule-making, enforcement and change, types and methods of sanction, accountability of law enforcers, and acknowledgement of the government and a nested system.

With large-scale marine environments, however, *hohorok* is ineffective in managing the excludability of fishers and the depletion of fisheries. The fishers, as scholars have confirmed in other studies (Fanning et al., 2009; Folke et al., 2007; P. C. Stern, 2011), have difficulty in recognising the boundaries of marine environments, excluding outside fishers, addressing problems of cross-scale linkages (such as pollution) and managing external drivers (such as the global market). Ostrom (1990) did not highlight these problems in her design principles for managing natural resources.

The old *hohorok* enabled the involvement of higher tiers of the government, as Ostrom suggested through a nested system. The system built institutional linkages to enable continuous interaction and adaptation across communities and tiers of the government. Instead, what currently exists is a situation where the national government and the local communities are managing the Sawu Sea MPA with other government tiers missing. The new *hohorok* does not enable a nested system suggesting that Ostrom's design principles might work if a nested system had been established, allowing all tiers of government to collaborate in the Sawu Sea MPA.

The other differences are related to *hohorok*'s focus on equity and food goals, which are not only absent in Ostrom's principles, but are also in conflict with modern fishing practice. For these goals, as Cinner and Aswani (2007) found in the Indo-West Pacific region, *hohorok* does not recognise the total closure of fishing access; it recognises continuous access (the length of the close period varied across communities), but it places an emphasis on different fishing methods and fishing periods for different groups of fishers in order to prevent fisheries depletion and enable a fair fisheries distribution. This practice strengthened community cohesion, which is missing in Ostrom's design principles.

Finally, in order to meet the need for food by the people, *hohorok* recognised temporal closures of fisheries. This finding supports Cinner and Aswani's (2007) study about similar practice in the Indo-West Pacific region but it is incompatible with modern fishing practices which recognise total closures of fisheries. *Hohorok* also recognised a broad integrated approach across marine and terrestrial ecosystems, instead of an ecosystem approach to fisheries management, enabling it to manage all sources of food. This practice shares similarities with CFM practices in many countries, where both terrestrial and marine resources are managed in integrated ways (Aswani, 2011; Cinner, Basurto, et al., 2012; Friedlander, 2018) enabling a more equitable distribution of resources and the compatibility of cost and benefit of managing the environment for local people. Although Ostrom did not identify this practice of integrated management practice with natural resources, her 'compatibility between cost and benefit principle', and nested system supports this practice.

8.7.4 Ostrom's (2011) institutional analysis and development framework

This study examined the applicability of CFM using the institutional analysis and development (IAD) framework because it provides a tool to analyse various contexts that shape rule interaction, individual behaviour and whole outcomes. The action arena, comprising an action situation and participants, which was the focus of this study, covers various variables conceptualised in seven rules-in-use.

This study supports previous studies (Clement, 2009; Koontz, 2005) that the framework does not enable an examination of institutional changes in order to explain the current state of interaction. It does, however, enable an explanation, for example, of how CFM has been applied according to different regimes, which influence its current capacity for being re-applied. The Rote Island case shows that while legislation limits the applicability of *hohorok*, attempts to revive *hohorok* failed to achieve its integration into fisheries management under the CTI. However, the framework does not particularly look at this, namely the changes in political and economic regimes across temporal scales that influence CFM's applicability.

This thesis, therefore, provides a different perspective from previous studies that have questioned whether CFM can be applied to large-scale marine environments. The findings demonstrate that social, ecological, institutional and political aspects influence the applicability of *hohorok*. Thus, this thesis suggests that the ineffectiveness of *hohorok* can relate to its previous abeyance, social and ecological characteristics (for example the size and proximity of marine areas from fishing communities), and deficiencies in institutional responses (for example partial application of an ecosystem approach to fisheries management). However, the on-the-ground problems and institutional responses have been influenced by political and economic regimes prior to and after the establishment of the Sawu Sea MPA, matters which are overlooked by the framework.

The other challenge to the framework is that it does not set the priority for the interaction rules rule, allowing participants to prioritise different rules.

Customary fishers prioritise the merits of other rules in the framework for applying *hohorok,* but the national government does not recognise customary fishers' prioritisation. The lack of prioritisation by the national government is due to the complexities of the contexts that shape institutions and their interaction. Different contexts require a different prioritisation. However, the framework fails to provide guidance on how to prioritise the rules in different contexts.

Similarly, there are neither indicators nor criteria established for each interaction rule of the IAD framework, enabling the participants to pursue different mechanisms for implementing the rules. The national government, for example, used a mechanism for selecting fishers' representatives at higher management bodies through appointment. This is not the mechanism used by the fishers for selecting their representatives at the community level; instead, the fishers directly elect their representatives. These conflicting mechanisms weaken the accountability and legitimacy of the representatives to the fishers. The rules fail to address the need to clarify the indicators and criteria involving all the participants in an action situation.

This research also contributes to a theoretical understanding of common-pool resources and, in particular, an understanding of how CFM can be implemented in marine and other resources management across temporal and spatial scales. This study uses the IAD framework to understand the interaction of fisheries management regimes, while Ostrom's (1990) institutional design principles provide an understanding of how CFM is applied and shape fisheries management. The principles enable the assessment of issues such as institutional changes and applicability across temporal and spatial scales. They are useful to understand and explain the recognition of CFM which had been in abeyance for a long period, and why the national government decentralised the power over fisheries management to customary fishers after a long period of decentralised fisheries management at the district level. These factors explain why CFM is applied in particular ways in large-scale marine zones after particular changes, which cannot be explained using the interaction rules of the IAD framework on its own.

This thesis offers a new perspective for re-examining studies and revisiting an understanding of CFM's applicability to managing both small and large-scale marine environments. The thesis proposes a way to integrate studies that focus on the structure of institutional interactions between government tiers with those that highlight the applicability of institutional design principles to explain the application of CFM in the large-scale marine environments. Thus, this study provides a comprehensive perspective to understand the applicability of CFM.

Chapter 9 Conclusion

9.1 Introduction

The crowded Sunday beach of forty years ago, with the fish catch landed, is long since history. In 2014, the Sunday beach was still deserted, but there was renewed hope as customary fishers were allowed to regain their control over coastal fisheries. The national government had revived *hohorok,* with which customary fishers manage coastal fisheries. Now, in 2019, this new hope might prove illusory without having had much benefit in terms of empowering customary fishers. The new hope seemingly failed before it delivered on its promises.

This research sought to assess the applicability of customary fisheries management (CFM) principles for managing large-scale marine areas. The case of Rote Island shows that the Indonesian government has failed to address some fundamental problems of marine commons. The failure, *by nature*, is because the revived CFM is incompatible with tradition, the changes to CFM require a longer time both for building trust of the fishers in the government and building fishers' capacity to manage CFM, and because customary fishers lack of resources and knowledge required to manage the challenges of large-scale marine commons. *By design,* the failure is due to the Indonesian government effort which appeared to depend more on funding support from global donors rather than collaborating with local officials and customary fishers, leading to partial application of both an ecosystem approach to fisheries management and CFM, and partial support for customary fishers. These factors pose difficulties for customary fishers to exclude outside fishers and address the depletion of fisheries.

9.2 The Applicability of CFM within Large-Scale Marine Management Regimes

The complex and dynamic nature of large-scale marine ecosystems had led countries in the Indo-West Pacific region to establish the Coral Triangle Initiative (CTI) in 2009. Its goals included establishing marine protected areas (MPAs) and applying an ecosystem approach to fisheries management (EAFM). The developing countries in the region tend to have small-scale fishers using CFM. Applying CFM was seen as a key to success in managing large-scale marine environments because CFM provides incentives for small-scale fishers to contribute to fisheries management and strengthen their compliance with regulations.

In pursuing the CTI's goals, the Indonesian government re-established *hohorok* in Rote Island as part of the Sawu Sea MPA. This policy allows customary fishers to manage fisheries autonomously, but the new synthesised *hohorok* is different from that in the past in many aspects; for example, the new one focused on fisheries conservation, while the old one focused on maintaining social justice. In addition, its application has been very limited, extending *hohorok* only to local marine areas in a few communities. At the same time, the national government recentralised fisheries management by strengthening its regional office and assuming the former provincial and district governments' functions. This policy allows both the community and the national government more power than previous decentralised fisheries management regimes.

By design, the applicability of *hohorok* had diminished prior to its revival. *Hohorok* had been marginalised by a lack of acknowledgements by the national government over several decades. It was further marginalised during decentralised fisheries management at the district level since the 2000s. These policies resulted in fishers' mistrust of the government and conflicts between fishers due to the competition over fishing areas and the depletion of fisheries (Chapter 5). Thus, there is a lack of supporting conditions, particularly resources and trust, for customary fishers to manage the revived *hohorok*.

By nature, *hohorok* cannot function effectively in the short run within large-scale marine commons. Trust restoration requires a substantial time to come about after a long period of denial and cannot be expected to quickly return simply because of a change to formal rules. Trust is an important element in the customary communities. Similarly, *hohorok* was a small-scale fishery regime applied in the freshwater fisheries and in marine fisheries along the coastline; it had never been applied to large-scale marine commons (Chapter 6). This practice did not enable the fishers to develop their capacity both their fishing equipment and knowledge of fisheries in large-scale marine areas because changes in customary communities can take generations.

At the implementation stage, the applicability of the revived *hohorok* is limited. The new *hohorok* created a few difficulties for fishers in terms of their support for it because it differs significantly from the traditional version. It does not aim to establish fair fisheries distribution, and there have been changes in contextual factors such as population growth (Chapter 6 & 7). These matters have been exacerbated by the implementation of separate management regimes, leading to the difficulties of fishers accessing decision-making across tiers of government. Thus, *hohorok* is inherently flawed in managing the challenges of large-scale marine commons that relate to institutional misfits and cross-scale linkages such as migratory fisheries, pollution and law enforcement.

The national government has intentionally failed to empower customary fishers in managing decentralised fisheries. The implementation of *hohorok* has enabled the excludability of local fishers, but *hohorok* does not solve the cross-boundary problems that depleted fisheries as has been the case with many communities in small-island states do in the Pacific. This failure, by nature, is because of the open nature of marine environments on Rote Island, making it difficult to exclude outside fishers and because of the limitation in the funding capacity of the national government, a common problem in many developing countries. By design, is due to the national government's focus on serving its interests, instead of empowering customary fishers. It relied on international donors and NGOs to support fisheries management and customary fishers. The Indonesian government tended to shift the responsibility to other stakeholders and to the fishers.

The reliance of the national government on other stakeholders to support fisheries management is evident in its approach in pursing the CTI's goal of adopting the ecosystem approach to fisheries management. The national government only partly adopted the ecosystem approach to fisheries management at the provincial and supra-national levels and only implemented *hohorok* in a few communities due to the limitation in funding. It relied on the sub-national governments, which are external parties to the Sawu Sea MPA, to bear the costs and responsibilities of pursuing the CTI's goals. These policies weakened the collective action of different groups of fishers across different communities, districts/provinces and countries.

By design, the CTI and the Sawu Sea MPA did not fully aim to address institutional misfits. Both the CTI and the Sawu Sea MPA did not adopt a full ecosystem approach to fisheries management. There were some marine areas and countries within the same ecosystem that were excluded. This suggests that the limited ability of state regimes to govern large-scale marine commons is similar to the limited ability of local regimes. However, the main key to *hohorok* effectiveness is the national government's desire to gain funding support from global donors, through the establishment of the CTI and the Sawu Sea MPA. It seems an ill-considered idea badly implemented and with other agenda in play. The Indonesian government is not interested in ecosystems or the local communities. Thus, the inapplicability of *hohorok* was partly a consequence of both institutional and political factors. This new knowledge was not highlighted in other studies.

Overall, there are many factors influencing the applicability of CFM within large-scale marine management regimes. The Rote Island case demonstrates that social-cultural, ecological-physical, institutional-policy, and political-economic factors at all tiers of government help determine the applicability of CFM. There are *by nature* challenges as well as *by design* ones. It is important to understand these factors. The application of CFM by customary fishers in isolation from the government will fail to deliver its promises because of the complexity and dynamics of large-scale marine commons. This suggests that one-off political decentralisation is insufficient. The complexity and dynamics of

fisheries and fishers require the government to provide on-going support for institution building and to deal with any arising conflicts.

Most of all, it is important for the national government to clarify its intention in applying CFM within large-scale marine environments managed according to an EAFM. The Rote Island case showed that the re-application of *hohorok* by the national government was influenced by the myth of idyllic noble savage, aiming to keep the Western romantic illusion of customary fishers with their indigenous practises alive and to keep the fishers happy. Through CFM and EAFM, the national government gained the fishers' consent to undertake conservation and to recentralise fisheries management. The national government's apparent goal has been to regain hegemony in fisheries management, instead of empowering the local government and the customary fishers, which enables it to control fisheries for its own interests.

The goals of the national government, however, have also been shaped by the presence of the CTI and the previous arrangement of fisheries management. A lack of funding is a common problem for developing countries, which explains the national government's reliance on natural resources extraction. The pursuit of its goals might have been different under an initiative that does not involve external parties (countries, donors and NGOs), which impose particular goals on developing country contexts. The national government has used the CTI and its goals particularly the EAFM to pursue its goals, which are otherwise difficult to achieve because of its previous lengthy conflicts with the natural-resource rich provinces. This phenomenon is among several contributions of this study to the body of knowledge: national governments, particularly where fisheries have been decentralised, use regional regimes to justify the re-centralisation of fisheries, re-strengthen its hegemony in fisheries and share costs of fisheries management with both customary fishers and global institutions.

9.3 A Way Forward for Improving Applicability of *Hohorok* to Managing Marine Commons

This study highlights several challenges to the applicability of *hohorok* to managing Rote Island's fishers, and more generally the management of marine commons. These include equity in fisheries management, institutional misfits, external challenges, and collective action influencing the depletion of fisheries and the exclusion of outside fishers. These problems are the result of the exclusion of several stakeholders and the unwillingness of the national government to establish collaboration, suggesting that power sharing with other stakeholders and capacity building are the key responses.

Within the community, equitable fisheries distribution, one of *hohorok's* goals, should shape fisheries management. Fisheries access can be confined to the fishers within the community, but an effort to address equity can take various forms beyond fisheries management to include other groups within the community. This inclusive principle of *hohorok* is not only consistent with the modern ecosystem approach to fisheries management that addresses collectiveness, but it also can strengthen collective action across neighbouring communities to manage cross-boundaries fisheries and pollution.

At the community level, the national government needs to apply *hohorok* in all communities in order to address depletion of fisheries due to institutional misfits. This policy will strengthen collective action and reduce free-riding activities because all customary fishers share similar costs and benefits of conserving fisheries. The application of *hohorok* will enable other communities to autonomously manage local marine areas, creating incentives to exclude outside fishers and control fisheries' depletion. Thus, this policy is about ensuring a power sharing among all customary communities.

Collaboration of various groups within a community in natural resource conservation strengthens shared norms and collective action. The difficulty that local Rote fishers have had in enforcing the law might have been able to be solved if Bajo fishers had been involved in managing *hohorok*. The revival of *hohorok* failed to incorporate the whole range of customary fishing practices

into the Sawu Sea MPA. Instead, all tiers of government have tended to view all groups of customary fishers as homogenous, leading to exclusion of other customary fishers in managing *hohorok*. Bajo fishers can contribute to *hohorok,* particularly in providing information and undertaking monitoring, but they were excluded from managing *hohorok*. The national government failed to integrate other customary fishing practices as well into *hohorok*.

The national government failed to include the village governments to support customary fishers. There is a lack of operational regulation to clarify the village governments' responsibility to empower local institutions. Thus, further regulations are needed to enable customary communities to access funding support from village government, which have had increased budget allocations from all tiers of government (Chapters 5 & 6).

A nested system enabling all tiers of the government to have jurisdiction and responsibility in managing the Sawu Sea MPA will build their ownership and their ability to control fisheries' depletion. This policy is in line with Ostrom's (1990) institutional design principle for managing the commons. This system would allow lower-level jurisdictions to exercise some degree of self-governance over an individual localised area leaving higher-level jurisdictions to manage cross-jurisdictional affairs with the involvement of lower-level jurisdictions. National policies are needed to empower lower-level jurisdictions to take initiatives without diminishing their autonomous rights to govern fisheries.

The gap between policy and practice at the district level relates to legal acknowledgement of customary fishers' rights to manage natural resources. Rote district government needs to enact a district law acknowledging the rights of customary communities to manage natural resources, including fisheries. This law would enable customary communities to claim their rights, both in managing fisheries and in accessing decision-making and resources at the district government level. More importantly, it would clarify the responsibilities of all tiers of the government in relation to empowering customary fishers to manage fisheries.

The empowerment of customary fishers can happen concurrently with the

empowerment of the provincial and district governments. The national government needs to involve the provincial and district governments in managing fisheries and marine resources without weakening the ecosystem approach to fisheries management. The district governments' involvement will build their ownership and support for customary fishers. A policy that re-establishes the Mayor's role in managing *hohorok* across Rote Island, as it previously did, and bringing both marine and terrestrial fisheries *hohorok* on Rote Island under the Mayor's leadership as *maneleo ina huk* will enable customary fishers to raise problems of institutional misfits and a lack of capacity for consideration by the Mayor. Similarly, the involvement of the provincial government strengthens both the district governments and local communities.

At the national and supra-national levels, the Indonesian government, as a leading member country in the CTI, needs to clarify its long-term responsibilities as well as those of non-member regional countries and organisations that benefit from the CTI. Despite the benefits they enjoy from migratory fisheries within the Coral Triangle region, many of the countries are not involved, they do not bear the costs of pursuing the CTI's goals. Their unclear responsibilities have created uncertainties in funding responsibilities, pushing the Indonesian government to decrease financial support for the Sawu Sea MPA.

These recommendations potentially change the power-sharing structure among participants at all tiers of the government, particularly at the national and supra-national levels. At the community level, changes to the management of *hohorok* in order to involve non-indigenous fishers will not bring significant resistance due to the long presence of non-indigenous fishers on Rote Island, their intertribal relationships and the dependence of indigenous fishers on non-indigenous fishers to manage fisheries.

Changes to enable both the district and provincial governments to have marine jurisdictions in the Sawu Sea MPA may be rejected by the Indonesian government. It had successfully clawed back control over fisheries management through the establishment of the CTI after almost two decades of decentralised fisheries management. These periods were characterised by several problems,

such as illegal fishing and the marginalisation of customary fishers in fisheries management, upon which the national government made the case for the recentralisation of fisheries management. However, with the revival of CFM, the potential for building collaboration across tiers of government can be developed and previous problems can be solved. Thus, the basis for the national government's rejection of sharing power with the district and provincial governments can be negotiated.

New policies that place other marine areas in the Sawu Sea into the Sawu Sea MPA will similarly face resistance from customary fisheries. However, the involvement of the provincial, district and village governments will enable them to manage the resistance. This suggests that the application of an ecosystem approach to fisheries management requires the application of a nested system to enable autonomous fisheries management and collaboration across tiers of government.

The main challenge is in applying a nested system because existing laws do not allow it. The Indonesian government has to change national law, something that is not in its interest. However, at the supra-national level, the Indonesian government's decision to decrease funding support for the CTI can serve as a wake-up call for the other participants and neighbouring non-member countries to financially support for the CTI. As a leading member of the CTI, any policy that the Indonesian government takes or fails to take can influence collective action within the CTI and put the CTI at risk of failure. Thus, the Indonesian government's interest in seeing the CTI succeed justifies the effort it takes to share power with local stakeholders.

9.4 Further Research

This research provides a first step in employing Ostrom's (1999) institutional analysis and development framework to examine the applicability of CFM within large-scale marine management regimes. However, the study does not use the whole framework to examine the application of CFM. There are several areas that warrant further research that fall outside the scope of this research.

Firstly, there is a need for studies about the application of CFM within large-scale marine management regimes for marine protection, but in different geographical contexts where customary fishers are migratory fishers. This is an approach that will advance the findings of this study about the applicability of CFM in large-scale marine environments. Such research will enrich insights about the extent to which customary migratory fishers influence the applicability of CFM within large-scale marine environments.

Secondly, research on the application of customary rules in other sectors of natural resource management that involve all government tiers would be useful. Research of this sort could explore how customary rules and collective action can lead to different priorities for customary people, such as a cost-benefit sharing arrangement and law enforcement, and by addressing institutional conflicts. The research could also show how a nested governing system of fisheries can strengthen collaboration and address these priorities.

Thirdly, research in non-fisheries areas that assesses how a single or a uniform customary practice can facilitate its application within an ecosystem would be valuable. This sort of work could look at how CFM can manage non-migratory natural resources within large-scale environments. It would provide different insights about managing large-scale environments with fewer problems relating to cross-scale linkages.

Finally, a further area for research relates to the interest of the national government in fisheries during periods of decentralised fisheries management at the district level. Such research would examine the political and economic interests or losses of the national government, which shaped the recent changes toward devolved fisheries at the community level, and the deconcentration of fisheries to the regional office of the national government (see Table 9.2).

Table 9.1: Areas of future research

Topic	Question	Case
Applicability of CFM	How does fishers' knowledge influence the applicability of CFM in large-scale marine environments?	Migratory fishers
Applicability of customary rules and practises in natural resource management	How do well-established customary rules and practices influence local people's priorities in the application of customary rules and practices?	All tiers of government
Applicability of customary rules and practises in natural resource management	How does a uniform practice of CFM within a large-scale environment facilitate its applicability?	Large-scale environments with a single example of CFM in practice
The political and economic interests of the national government in fisheries management	How does decentralised fisheries management influence the national government's political and economic interests?	Natural resource-rich developing countries

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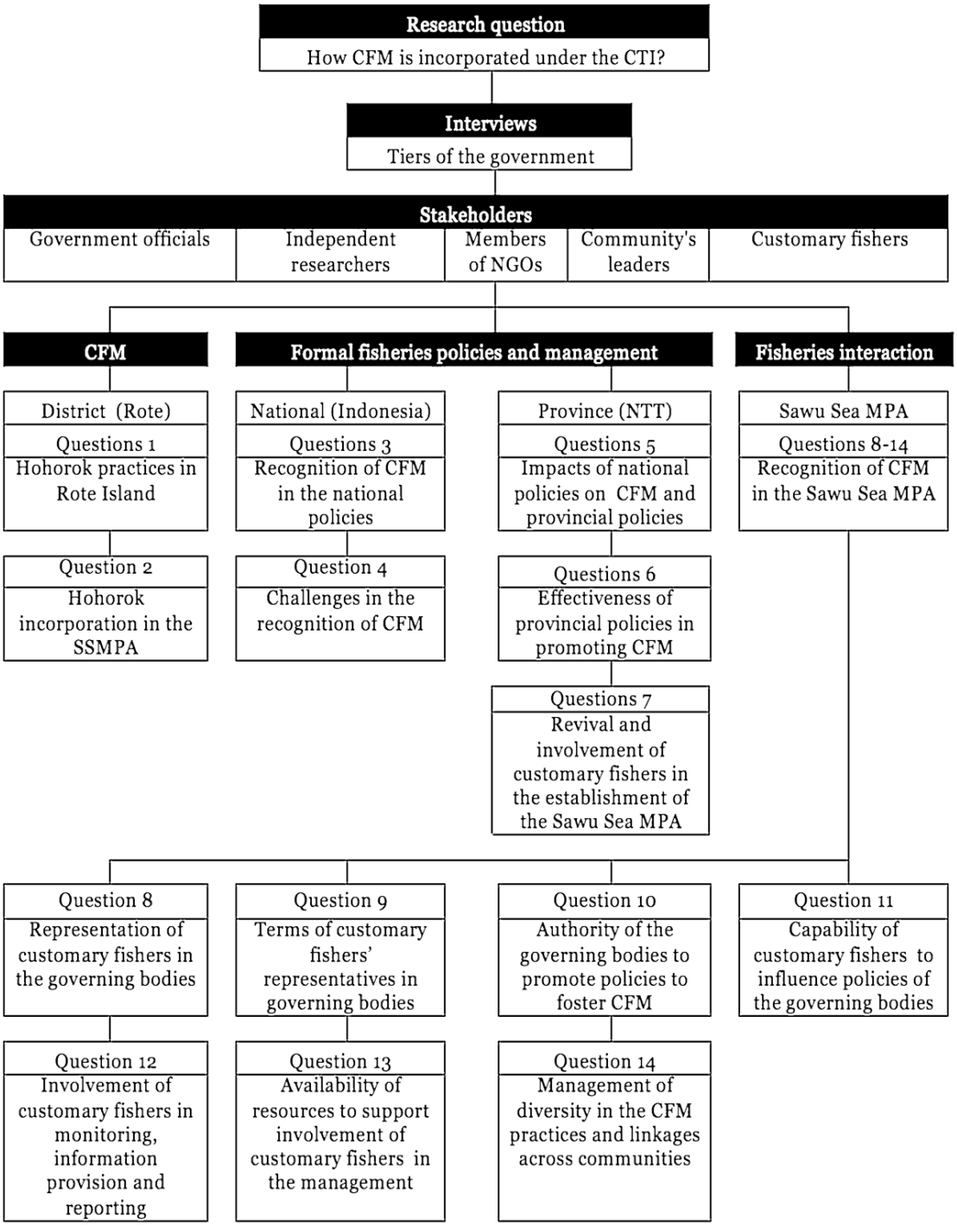
Appendices

1) Interview participants across jurisdictional levels

Level	Organisations	Officials/Persons
National: Indonesia	Ministry of Marine Affairs and Fisheries	Former Directorate General of Marine, Coastal Area and Small Islands
	Conservation International	Director
	Independent research	An expert in customary communities
	NMU-MPA	Director and a staff member
Provincial: NTT	Provincial Tourism Department	Head of Tourism Promotion Division
	Fisheries and Marine Affairs Department	Current and former Heads of Marine Conservation Section Head of Fisher Empowerment Section
	The Nature Conservancy	Director
	Development Planning Agency	Secretary
	Environmental Protection Agency	Head of Supervision and Controlling Pollution Division
District: Rote Ndao	Economic Bureau	Current and former Heads
	Fisheries and Marine Affairs Department	Secretary
	Rote Ndao Forum for Adat and Culture	Coordinator and Secretary
		An independent researcher of Rote adat
Community	Oelua village	Head of Oelua village *Manahoro* coordinator (an indigenous fishers) An indigenous fisher A non-indigenous fisher
	Ndao island	A customary figure
	Lalukoen village	A *manahoro* of the Tua lake
	Oetefu village	An indigenous customary fisher

2) The framework for semi-structured interview questions



3) Low Risk Notification

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

Date: 26 January 2017

Dear Jermi Melkias Haning

Re: Ethics Notification - **4000017160** - **Incorporating Developing Countries' Customary Fisheries Management in Multilateral Environmental Agreements: Rote Island, Indonesia**

Thank you for your notification which you have assessed as Low Risk.

Your project has been recorded in our system which is reported in the Annual Report of the Massey University Human Ethics Committee.

The low risk notification for this project is valid for a maximum of three years.

If situations subsequently occur which cause you to reconsider your ethical analysis, please go to http://rims.massey.ac.nz and register the changes in order that they be assessed as safe to proceed.

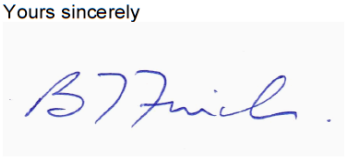
Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:
"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named in this document are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher(s), please contact Dr Brian Finch, Director - Ethics, telephone 06 3569099 ext 86015, email humanethics@massey.ac.nz. "

Please note, if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to complete the application form again, answering "yes" to the publication question to provide more information for one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely



Research Ethics Office, Research and Enterprise
Massey University, Private Bag 11 222, Palmerston North, 4442, New Zealand **T** 06 350 5573; 06 350 5575 **F** 06 355 7973
E humanethics@massey.ac.nz **W** http://humanethics.massey.ac.nz

4) Example of Application Letter in Bahasa Indonesia

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

Kupang, 26 Juni 2017

Ketua Dewan Konservasi Perairan Provinsi NTT
di
Tempat

Dengan hormat,

Permohonan untuk mengadakan penelitian

Perkenalkan, saya adalah seorang mahasiswa doktor dari Massey University di New Zealand. Saya sedang melaksanakan penelitian dengan judul *Pengelolaan Perikanan Adat oleh Negera-Negara Berkembang Yang Terlibat dalam Pernjanjian-Perjanjian Lingkungan Multinasional* (Incorporating Developing Countries' Customary Fisheries Management in Multilateral Environmental Agreements).

Penelitian saya di Indonesia difukuskan untuk memahami penguatan perikanan adat dalam rangka mendukung Coral Triangle Initiative (CTI) dan terutama pengelolaan Taman Nasional Perairan (TNP) Laut Sawu di Nusa Tenggara Timur. Pada level kabupaten, saya akan meneliti kebijakan revitalisasi *Hohorok* di pulau Rote dan sejauhmana Hohorok berperan dalam pengelolaan TNP Laut Sawu di Kabupaten Rote Ndao.

Oleh karena itu, saya mengharapkan pertolongan Bapak/Ibu demi kelancaran penelitian saya ini. Saya berencana untuk melaksanakan pengumpulan dokumen dan wawancara dengan pejabat pemerintah, peneliti/akademisi, tokoh masyarakat dan nelayan adat terkait dengan pengelolaan konservasi perikanan dalam rangka mendukung pencapaian tujuan CTI. Kegiatan pengumpulan data akan berlangsung hingga bulan Agustus 2017.

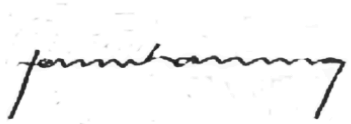
Te Kunenga ki Pūrehuroa
School of People, Environment and Planning
Private Bag 11222, Palmerston North 4442, New Zealand T 06 356 9099 F 06 355 7965 http://pep.massey.ac.nz

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

Terlampir adalah informasi lebih rinci terkait dengan penelitian saya. Dokumen termasuk 1) Lembar informasi; 2) Lembar persetujuan wawancara; dan 3) Panduan daftar pertanyaan.

Bila masih ada hal yang belum jelas, silahkan kontak saya. Saya akan sangat senang untuk menyediakan informasi tambahan. Terima kasih.

Salam,



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Compulsory Statements

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5) Information Sheet in Bahasa Indonesia

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

Pengelolaan Perikanan Adat oleh Negera-Negara Berkembang Yang Terlibat dalam Pernjanjian-Perjanjian Lingkungan Multinasional

Lembar Informasi

Bapak/Ibu Yth,
Terima kasih atas kesediaan Bapak/Ibu untuk terlibat dalam penelitian ini. Lembar informasi ini memuat informasi rinci tentang penelitian ini.

Pendahuluan
Saya seorang mahasiswa doktor pada School of People, Environment and Planning, Massey University di New Zealand. Saya melakukan penelitian ini dibawah Professor Christine Cheyne dan Dr. Jeffrey McNeill. Informasi rinci terlampir.

Gambar penelitian dan permohonan partisipasi
Penelitian ini bertujuan untuk memahami kebijakan negara-negara berkembang mengelola dan mengakomodir perikanan adat dalam melaksanakan perjanjian-perjanjian regional dalam mengelola lingkungan. Untuk tujuan ini, penelitian ini mengambil studi kasus pada Coral Triangle Initiative (CTI), khususnya Taman Nasional Perairan Laut Sawu untuk memahami strategi pengelolaan perikanan adat di Rote yang dikenal dengan sebutan *Hohorok*. Untuk itu saya sangat mengharapkan kesediaan bapak/ibu untuk mengambil bagian dalam penelitian ini.

Identifikasi dan perekrutman peserta
Peserta dalam penelitian diidentifikasi melalui organisasi dan peran para peserta dalam persiapan pembentukan Taman Nasional Perairan Laut Sawu di Nusa Tenggara Timur (NTT) dan revitalisasi praktek perikanan adat di Pulau Rote. Peserta terdiri dari pejabat publik, peneliti, pekerja olembaga swadaya masyarakat, tokoh adat dan nelayan adat.

Penelitian ini tidak menyediakan kompensasi untuk para peserta. Peneliti hanya bisa mengucapkan banyak terima kasih atas bantuan dan pengorbanan bapak/ibu. Saya akan menyesuaikan waktu dan tempat wawancara dengan kondisi bapak/ibu.

Sebagai informasi bahwa dasar pelaksanaan penelitian adalah sukarela, tanpa paksaan dan tidak ada dampak yang tidak dikehendaki baik bagi bapak/ibu yang terlibat maupun yang tidak terlibat. Para peserta diinformasikan tentang penelitian ini sebelum

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dilaksanakan wawancara agar para peserta memiliki waktu dan pengetahuan yang cukup untuk mengambil keputusan yang tepat. Setelah bapak/ibu memutuskan untuk ikut dalam penelitian ini, bapak/ibu tetap berhak mengontrol informasi yang hendak dibagikan, mengundurkan diri dan mengakses hasil wawancara. Hal ini dimaksudkan untuk mengurangi dan mencegah kemungkinan timbulnya resiko yang tidak dikehendaki.

Prosedur penelitian

Pengumpulan data dalam penelitian ini mencakup analisis dokumen dan wanwancara. Dokumen seperti peraturan perundang-undangan, dokumen perencanaan dan evaluasi yang berkaitan dengan topik penelitian. Wawancara akan dilaksanakan dengan pejabat pemerintah, peneliti/akademisi, pekerja lembaga swadaya masyarakat, tokoh adat dan nelayan adat. Wawancara dilakukan terhadap satu peserta pada suatu saat; tidak dilakukan secara bersamaan, selama sekitar 45 menit dan akan direkam.

Pengelolaan data

Data yang terkumpul, khususnya data lisan akan dituliskan untuk memudahkan analisis. Sumber dan penyedia data akan diberi label dank ode khusus. Identitas asli seperti nama, alamat dan organisasi peserta tidak akan dimunculkan dalam analisis dan laporan thesis, jika bapak/ibu tidak bersedia.

Semua data akan diperlakukan secara rahasia. Data akan disimpan pada lemari dan komputer yang terkunci. Hanya peneliti dan dosen pembimbing yang memiliki akses ke data yang terkumpul.

Bapak/ibu bisa memperoleh rangkuman dari penelitian ini. Saya dapat menyediakannya baik via surat elektronik maupun via pos bila diperlukan.

Hak para peserta

Bila bapak/ibu berkenan untuk diwawancara, maka bapak/ibu berhak untuk:

- Menolak menjawab pertanyaan tertentu;
- Mengundurkan diri dari penelitian ini hingga tiga minggu setelah wawancara;
- Mengajukan pertanyaan apa saja terkait penelitian ini selama bapak/ibu terlibat;
- Menyediakan informasi dengan syarat identitas bapak/ibu tidak dibuka bila bapak/ibu tidak berkenan;
- Meminta rangkuman penelitian ini setelah penelitian selesai dilaksanakan;
- Menghubungi saya dan dosen pembimbing saya bila ada pertanyaan yang hendak disampaikan;

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- Meminta untuk tidak dilakukan perekaman kapan saja selama wawancara

Sekali lagi, bapak/ibu dapat menghubungi saya apabila bapak/ibu membutuhkan informasi tambahan. Kami akan dengan senang hati menyediakan informasi yang dibutuhkan. Terima kasih.

Salam,

Jermi Haning
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Email: haning.jermi@gmail.com

Pembimbing:

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6) Agreement Sheet in Bahasa Indonesia

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Lembar persetujuan

Saya telah membaca Lembar informasi dan informasi rinci tentang penelitian telah dijelaskan kepada saya. Saya mengajukan beberapa pertanyaaan dan telah dijawab dengan memuaskan. Saya mengerti bahwa saya dapat mengajukan pertanyaan bila masih ada hal yang belum jelas di waktu yang akan datang

Saya setuju untuk direkam wawancara ini. Saya setuju untuk diwawancara sesuai dengan penjelasan yang telah disampaikan melalui Lembar informasi.

Tanda tangan: ..... **Tanggal:** .....

Nama lengkap .....

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7) Interview Guide in English

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Incorporation of Developing Countries' Customary Fisheries Management in Multilateral Environmental Agreement: Rote Island, Indonesia

Introduction

- Self introduction and explain purpose of interview
- Outline general topics that could be covered by the interviewee
- Explain purpose of the audio recording
- Check that they still have a copy of the information sheet
- Assure confidentiality and have the participant sign the consent form

General questions:

- First of all, can you please brief me about your responsibilities in fisheries?
- What would you say are the major challenges to fishing and fisheries at the moment and in the future?

Specific questions:

Customary Fisheries Management in Rote

Understanding Hohorok	
Participants	1. Customary Community Association; 2. Hohorok Coordinator; 3. Customary fishers
1) In your view, why was hohorok revived in the SSMPA?	
2) How has the revival been done? ▪ Managerial positions and hohorok enforcers ▪ Changes in the current practices of hohorok	

Fisheries Management in the Sawu Sea Marine Protected Area

The national government

Participants	1. Ministry of Marine Affairs and Fisheries; 2. Indonesia Social Science Institute; 3. Customary Communities Association
3) Given that the legislation for CFM requires a minimum number of the community, what would happen to smaller communities and migratory fishers? ▪ Article 8 of Law 6/2014 on Villages	
4) How effective do you think the implementation of conservation policies in promoting CFM has been since 2014?	

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The provincial government

Participants	1.Fisheries and Marine Department; 2. Development Planning Agency; 3. Environmental Protection Agency; 4. International NGOs
5) In your view, how national conservation policies introduced since 2014 impacted on polices of the provincial government? ▪ Recentralisation of fisheries management ▪ Fisheries culture and capture movement programme ▪ Promotion of CFM	
6) How effective are provincial government policies for recognising CFM? ▪ Spatial planning and 2014's revision (Regulation 9/2005 on Spatial Planning) ▪ Customary marine conservation area ▪ Article 26 of Regulation 3/2006 on Environment Control ▪ Law enforcement ▪ Planning of the SSMPA	
7) The role of INGOs in reviving CFM in NTT has not been documented. Please tell me about their role?	

The management of the SSMPA

Participants	1. National Conservation Agency 2. Provincial Conservation Committee 3. District Conservation Forum
8) Position rules	How significant is the representation of customary fishers in the governing body of your organisation?
9) Boundary rules	What are the condition for entry and exist a representative of customary fishers from the governing bodies?
10) Choice rules	To what extend do you have authority to promote policies to foster CFM?
11) Aggregation rules	To what extend are customary fishers able to influence the policies of your organisation?
12) Information rules	How are customary fishers involved in communication, information exchanging, monitoring and reporting in relation to the SSMPA?
13) Payoff rules	What resource are available (e.g. staff and finance) to support customary fishers involving in the management of the SSMPA ▪ Source of finance ▪ Challenges
14) Scope rules	How does your organisation deal with competing CFM practices and overlapping geographical areas? ▪ Challenges in migratory fisheries